RAILWAY TRACK and STRUCTURES

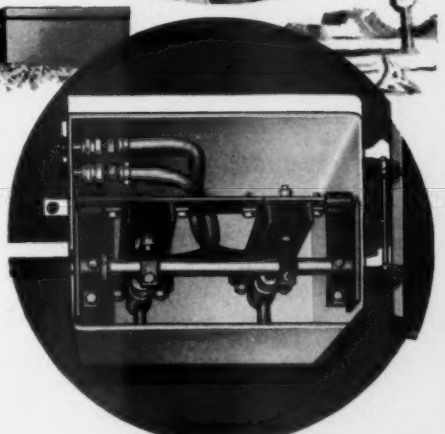
A Simmons-Boardman TIME-SAVER Publication

NEW MECO LUBRICATOR
type MC for curved rails . . .

extends life of curved rails and locomotive wheel flanges two to four times!

The new MecoLubricator Type MC incorporates engineering advancements throughout its construction . . . Designed to give maximum lubrication on curved rails and thereby extend the life of rails, as well as the life of the locomotive wheel flanges, from two to four times . . . the type MC *permits higher speeds on curves with safety and assurance.* MecoLubricators are used on the majority of railroads . . . The savings in time, labor and speed that have resulted from their use in the last twenty-five years has more than proven their value to the railroad industry.

Get the complete facts on this new and improved lubricator today. Write for complete descriptive bulletin and prices . . .



grease container

AND IMPROVED FEATURES INCLUDE:

- Greatly increased lubricant capacity.
- Two independent pumps distribute grease to wiping bars.
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- Completely new actuating mechanism—has fewer moving parts and easier adjustment.

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Division of Poor and Company
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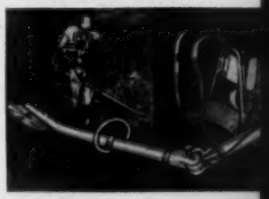
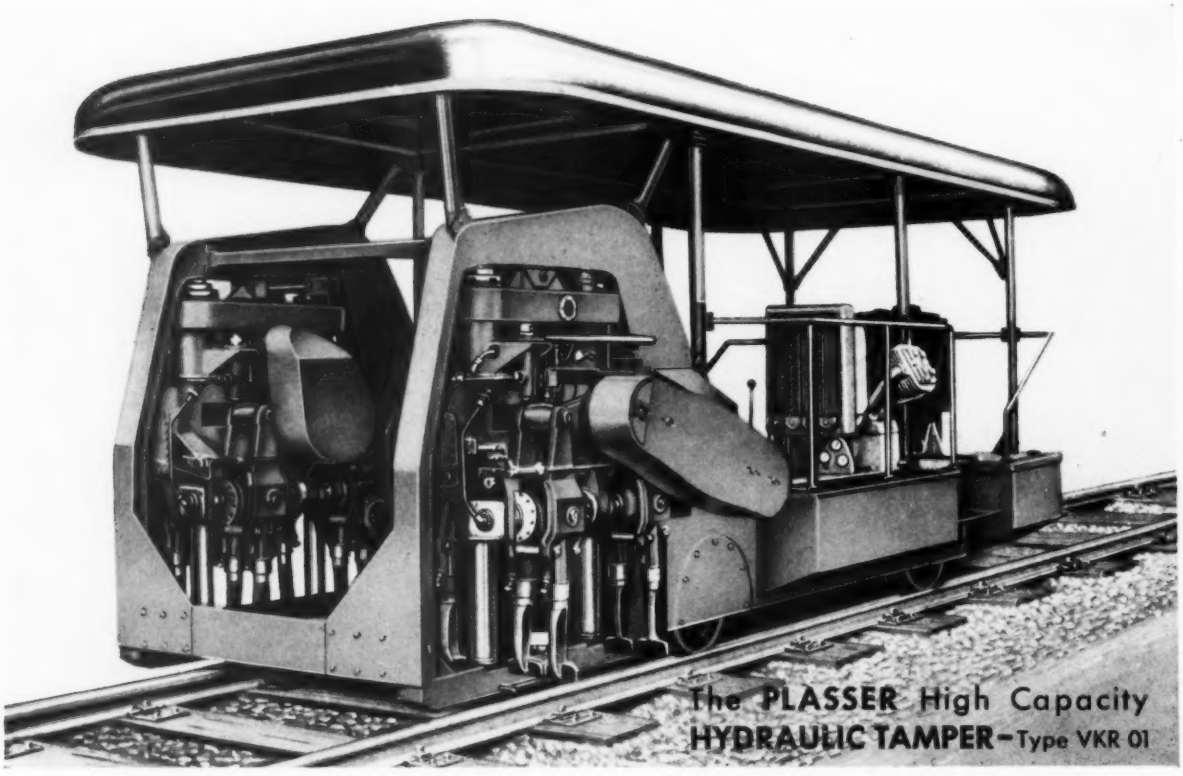
MACK REVERSIBLE SWITCH POINT PROTECTOR
Prolongs the life of switch points about 4 times; then is reversed and again extends the switch point life for another similar period.



BRUSH CUTTER
Cuts right-of-way maintenance costs. One operator can do the work of eight men using brushhooks or scythes. Extreme maneuverability.



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HYDRAULIC TAMPER – Type VKR 01

HOW ONE MAN CAN TAMP 1100 FEET IN ONE HOUR!

One chief engineer writes this: ". . . Three of the Plasser machines have worked generally in granite ballast and have had a maximum production rate ranging from 900 ft. to 1,100 ft. per hour, with the maximum surfaced in one day of 6,240 ft. . . . Since we are primarily a single track line, our production is largely dependant on the on-track time we have available . . ."

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1. Economical one-man-operation.
2. Hydraulic pneumatic controls eliminate manual effort.
3. Uniform ballasting guaranteed by preset pressure.
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5. Adjustment for deep or ordinary tamping may be made while running.
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7. Lowest maintenance cost of any tamping machine.
8. Pneumatic high-pressure penetration of tamping heads ideal for fouled or cemented ballast.

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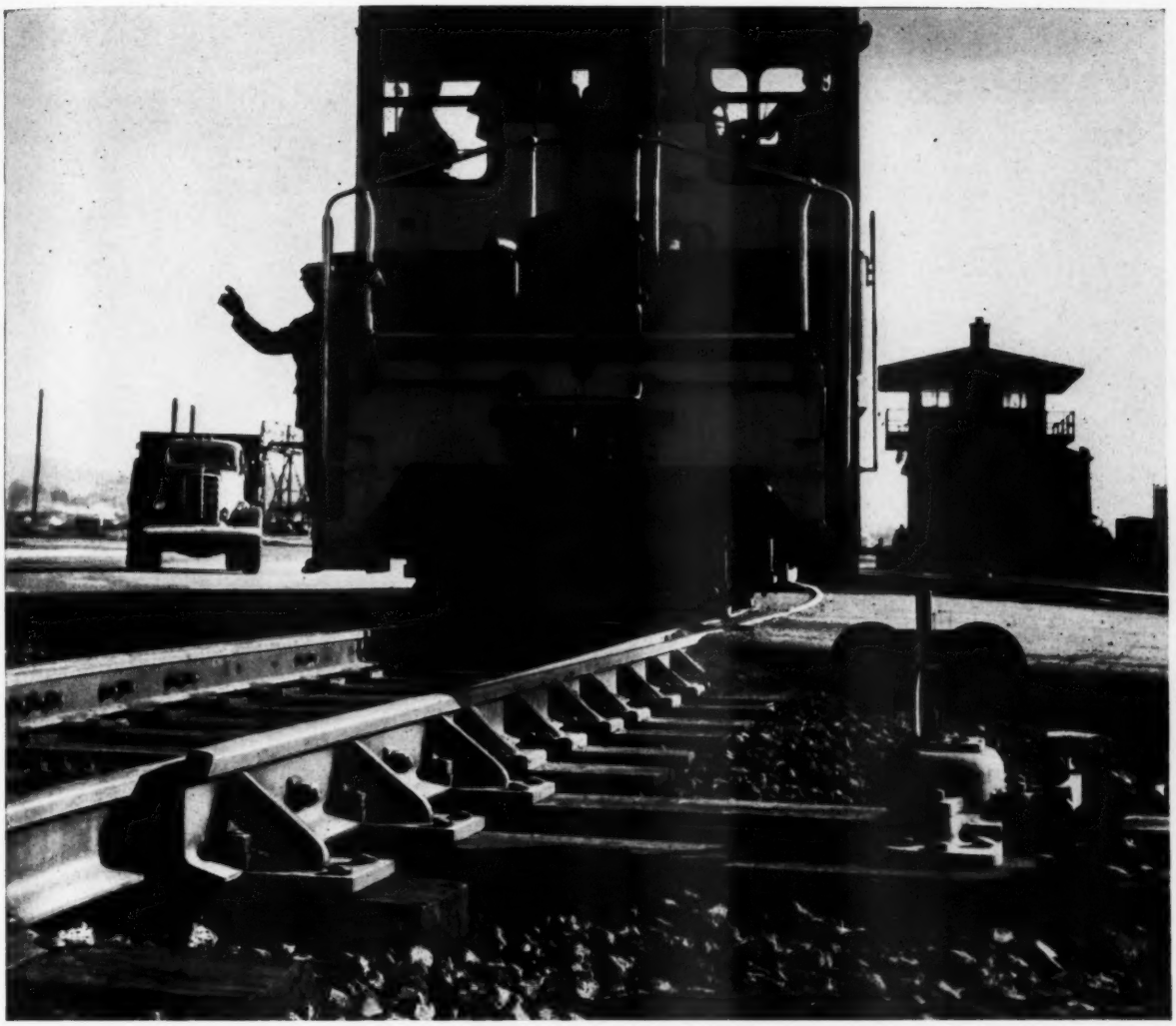
PLASSER RAILWAY MACHINERY



Fewer derailments, longer switch point life with Bethlehem Switch Point Guard Rail

Now you can have positive protection against wheel-climbing, derailments, and the "picking" and cutting of switch points. Bethlehem's new Switch Point Guard Rail, Model 755, was designed expressly for use at switch points. And what a whale of a job it does!

It works on the same principle as the self-guarded frog. As shown in the photograph, the head of the Model 755 stands higher than the head of the stock rail. When wheels pass through the guarded area, the guard rail holds the wheel flanges away from the point of the switch, allowing the trucks to pass smoothly through without even touching the actual points.

This, of course, is rugged duty so the Model 755 is heat-treated to provide the extra toughness needed. When the guard does finally become worn after long and heavy use, it can be replaced independently of slide plates, filler blocks and braces, at low cost.

Bethlehem's Switch Point Guard Rail is 4 ft 9 in. long, with a straight guarding face of 3 ft 3 in. Ends are beveled to provide an easement for the wheels. Side braces are heavily welded to the slide plates to hold the guard rail firmly in its proper vertical position.

A Bethlehem representative will be glad to give you facts and figures to show how quickly the Model 755 pays for itself. Just write to the address below and we'll arrange a get-together at your convenience.

BETHLEHEM STEEL COMPANY
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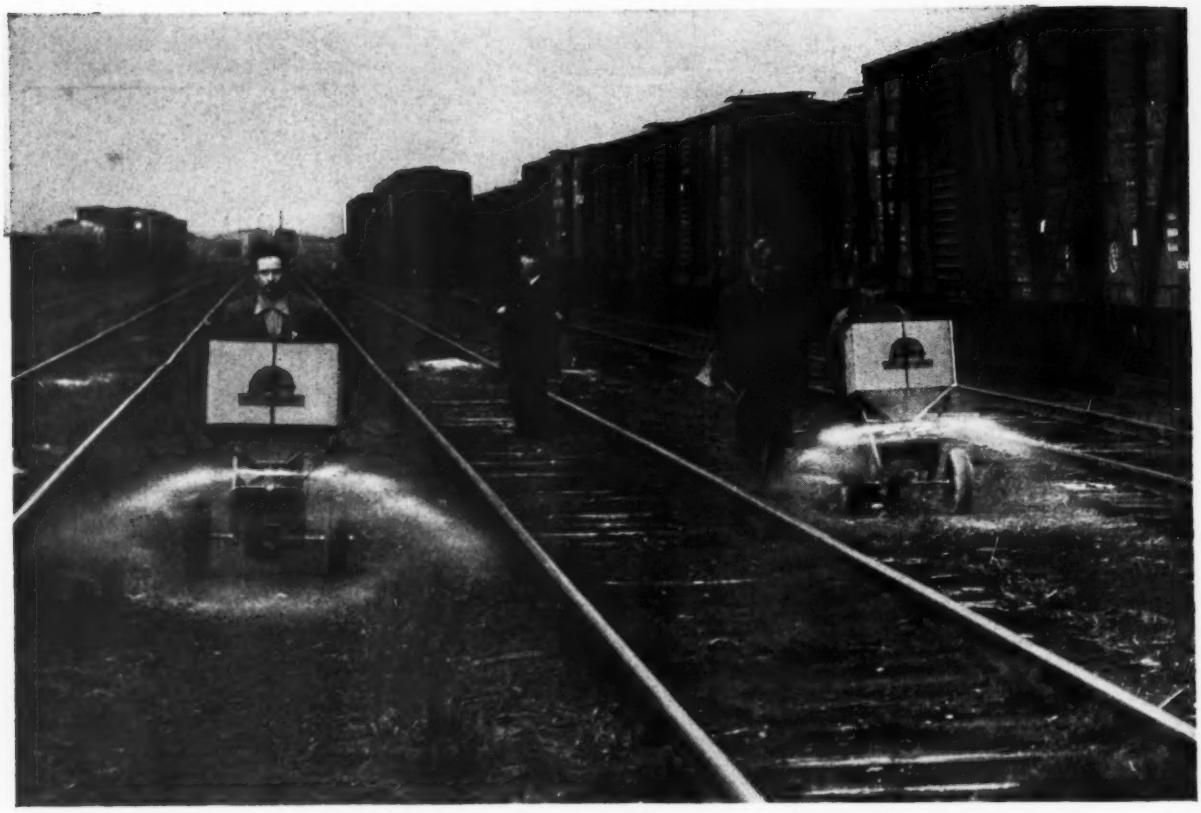

ONE DOSAGE of DRY *Nalco* H-174 for ALL-YEAR WEED CONTROL

Low dosage — usually a small fraction of that of other "apply dry" formulations — is a big advantage you get with H-174. And it's easily explained: Nalco H-174 has an unusually high concentration of powerful killing ingredient. *You get much more killing power with much less chemical to transport and apply!*

Nalco H-174 is effective whenever you apply it, but you can get full advantage from this powerful herbicide by spreading a single dosage about 2 weeks *before* weeds begin to emerge. H-174 will keep them down all year long, eliminating unsightly and inflammable weed debris, preventing re-growth and mid-season seeding.

Spreading *dry*, granular Nalco H-174 is a fast, simple operation. No mixing, spraying, or dilution . . . ready to use as it comes from bag or convenient shaker box . . . distribute by hand or with mechanical spreaders . . . For better weed control, plan on using Nalco H-174!

H-174 is one of a complete line of Nalco weed control chemicals, both dry and liquid, in wide use by railroads and industries throughout the world.

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RAILWAY
TRACK and STRUCTURES

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M&StL's vice president and comptroller describes a simplified and mechanized system recently introduced on that road.

The case for all-welded bridges 28
Dr. Shu-t'ien Li gives reasons why he believes such structures are practicable as well as more economical than riveted bridges.

Now it's brighter, lighter in this big train shed 32
C&NW upgrades its facility at Chicago with aluminum paint, fluorescent lighting and translucent skylights.

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In revising the grade of its Potomac yard the RF&P made effective use of a track cleaner to excavate and load material.

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DON'T MISS . . .

Because traffic density is high on the New York Rapid Transit Lines, traffic cannot be diverted long for maintenance purposes. Consequently they have to figure out fast ways of doing such work. Laying track in panels is one short cut now being used.

. . . in the July issue

RAILWAY
TRACK and STRUCTURES

Dear reader:

No reason to defer long-range planning

Most maintenance men are struggling with serious current problems. Their allotments have, in general, been cut rather deeply, and they are busy trying to figure out ways of stretching their skimpy allowances to cover the work that can't be deferred.

But maintenance work isn't the only thing that's being deferred in this situation. Long-range planning seems also to have gone on the "deferred" list, at least to some extent. A year ago it was beginning to appear that systematized, stabilized maintenance-of-way programs were closer to realization than ever before. Have the current disruptions caused by the business recession been allowed to obscure the fact that the achievement of stabilized programs is just as worthy an objective today as it was then?

As a matter of fact, evidence can be found here and there that roads hard hit by the recession are clinging to the belief that it's more economical in the long run to carry out reasonably adequate programs even in years of relatively poor business. A maintenance man on a road that holds to this belief remarked recently that "for a poor railroad we sure are spending a lot of money." Despite the fact that this road has been in the red very month so far this year it is spending large sums for work equipment. And it is going ahead with a surprisingly large maintenance program.

Other roads can be found with the same approach to the maintenance problem. Behind this policy is the conviction that the current recession is a temporary phase, to be followed soon by a resurgence of railroad business. In fact, at mid-year 1958 the belief is growing that the bottom of the business cycle has been reached. The question is not whether business will get better but when.

This point of view does not overlook the fact that the railroads have fundamental problems peculiar to them, problems which are quite apart from those produced by the recession. But Congress is counted on to take action that will give the railroads some degree of relief from the inequities underlying these fundamental problems. In that event they will be in a better position than ever to take advantage of future periods of prosperity.

What can we conclude from this analysis of the railroads' position? Simply this: while the industry admittedly is faced with serious problems there are sound reasons for believing it will emerge from its present difficulties into a brighter future.

How does this conclusion effect the maintenance man? For him it means that the present period of hand-to-mouth maintenance will, in all likelihood, soon be a thing of the past. Thus, while grappling with current problems, he will not want to lose sight of the fact that there are long-range goals to be achieved.

Fundamental among these is the need for conducting maintenance work in the most economical manner possible, and that can only be done in the long run by systematized and stabilized programs. It may be necessary to defer needed maintenance work at times, but there should be no deferment of objective thinking about the future.

MHD

For the Northern Pacific

FOUR NO. 12s SPEED A 20-MILE RELOCATION JOB

The cost-cutting versatility of big CAT* No. 12 Motor Graders was demonstrated again on a 20-mile track relocation job on the Northern Pacific Railway near Trout Creek, Montana. Guy F. Atkinson Company, San Francisco, had four No. 12s at work!

ONE—The No. 12 pictured was grading a haul road to a gravel pit for five DW20s.

TWO—The second was grading for six DW20s and six D8s excavating a 1,300,000 cu. yd. cut.

THREE—The third was doing finished grading on the roadbed, covering 15 miles per day.

FOUR—The fourth was cutting a drainage ditch.

The No. 12 Motor Grader is one of the most useful off-track machines a railroad can own. It can shape embankment, eliminate irregular fills, control weeds and brush, police the yard, clean side ditches and clear snow.

It is built for heavy, round-the-clock work with its balanced design and dependable four-cycle Cat D318 Engine. Operators like the fast positive controls, easy blading positions and unobstructed visibility. Most tire down time is eliminated by tubeless tires. The exclusive oil clutch operates for many hundreds of hours without adjustment.

Your Caterpillar Dealer—who specializes in fast, efficient service and maintains a complete inventory of parts for you—is ready to demonstrate Cat Motor Graders on your job. Just give him a ring and name the date.

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FOR THE

GREAT RAILROAD TIE ROBBERY

THE

MOISTURE AND ABRASIVE GANG

When these mischievous marauders creep under your tie plates, they cause the breakdown of the supporting power of the tie under the plate and the holding power of the spike hole wood.

REWARD

Your reward is *many thousands of dollars per year in extended tie-life* —for keeping these destructive agents from under tie plates with Bird Self-Sealing Tie Pads.

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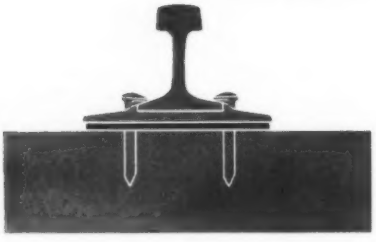

SELF-SEALING TIE PADS TO THE RESCUE

When you put Bird Self-Sealing Tie Pads on guard, you will never be robbed by the Moisture and Abrasive Gang! Over 20 years of in-track experience prove that Bird Self-Sealing Tie Pads positively seal out moisture and abrasive materials. For informative booklet on how to slash your tie costs 50% and more — write to Bird Tie Pads, East Walpole, Massachusetts, Department HTS-6.

Bird Self-Sealing Tie Pads are Recommended for:

BRIDGE DECKS • CURVES • SWITCH TIES • HIGHWAY GRADE CROSSINGS AND OTHER PAVED AREAS • CROSSING FROGS • INSULATED JOINTS • WITH SMALLER TIE PLATES • PILE CUTOFFS • THROUGH-STATION PLATFORMS • OUT-OF-FACE INSTALLATIONS IN RAIL-LAYING PROGRAMS • SANDY LOCATIONS • ALL OTHER AREAS WHERE TIE LIFE IS SHORT OR REPLACEMENT COSTS HIGH

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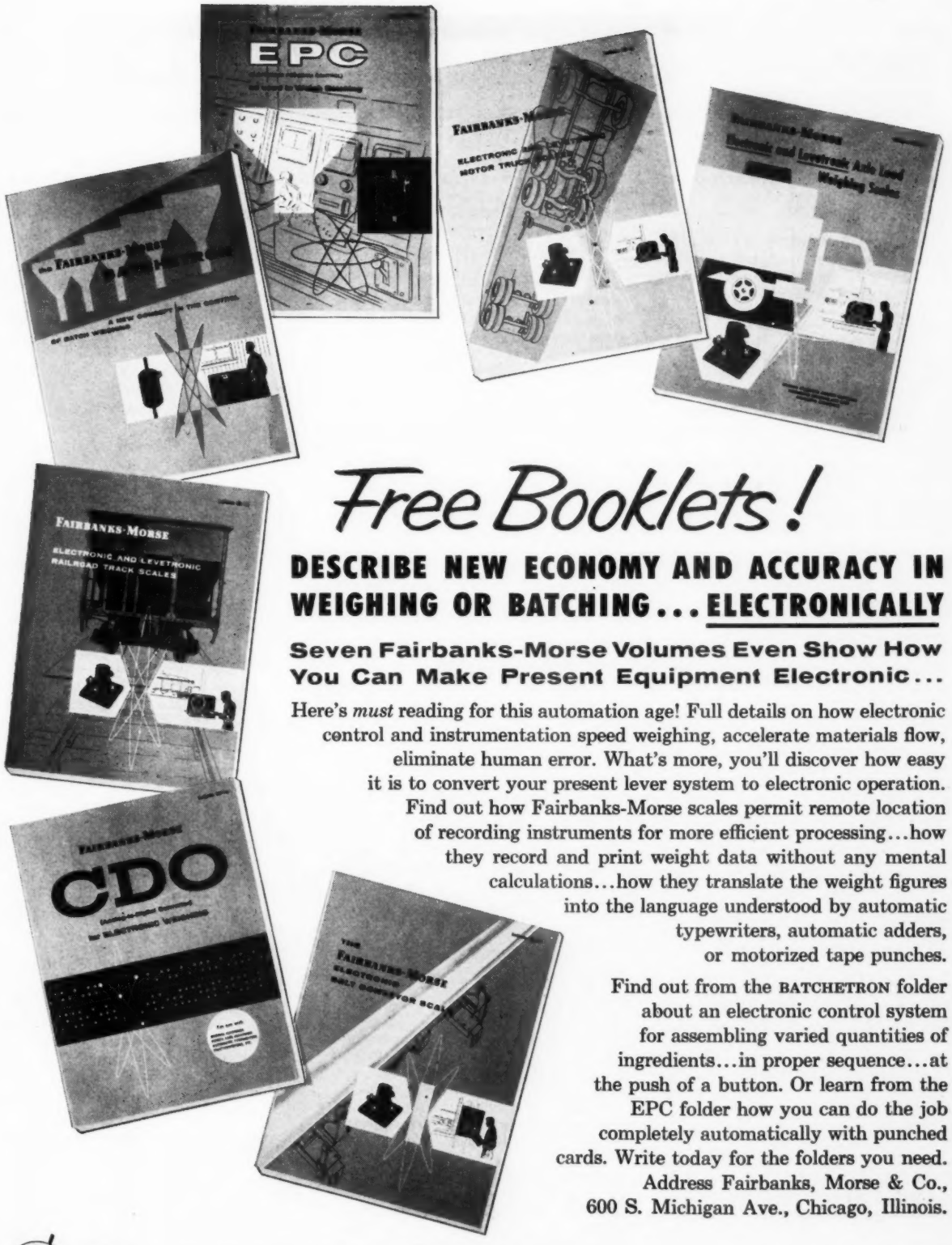

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Seven Fairbanks-Morse Volumes Even Show How You Can Make Present Equipment Electronic...

Here's *must* reading for this automation age! Full details on how electronic control and instrumentation speed weighing, accelerate materials flow, eliminate human error. What's more, you'll discover how easy it is to convert your present lever system to electronic operation. Find out how Fairbanks-Morse scales permit remote location of recording instruments for more efficient processing...how they record and print weight data without any mental calculations...how they translate the weight figures into the language understood by automatic typewriters, automatic adders, or motorized tape punches.

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News about people

BANGOR & AROOSTOOK—Gerald E. Wiggins, has been appointed assistant to bridge and building superintendent, with headquarters at Houlton, Me.

CHARLESTON & WESTERN CAROLINA—R. W. Marye, general manager, with headquarters at Augusta, Ga., and formerly chief engineer, retired on April 1.

ERIE—John S. Parsons, assistant chief engineer—maintenance of way, Cleveland, has been promoted to chief engineer there, effective May 1, with jurisdiction over the engineering and maintenance of way departments. He succeeds **Blair Blowers,** who has retired after 46 years' service with this company. **Lawrence H. Jentoft,** engineer maintenance of way of the Eastern district, at Jersey City, N. J., goes to Cleveland to succeed Mr. Parsons as assistant chief engineer—maintenance of way. **Wesley F. Petteys,** division engineer at Hornell, N.Y., has been promoted to engineer maintenance of way of the Eastern District to succeed Mr. Jentoft. **Arthur Price,** division engineer at Jersey City, is transferred to Hornell to replace Mr. Petteys. **Louis M. Swoap,** assistant to the district engineer maintenance of way at Jersey City, succeeds Mr. Price as division engineer at that point.

FRISCO—G. C. Payne, general foreman, bridges and buildings and water service, at Ft. Smith, Ark., has been transferred to Springfield, Mo., with jurisdiction over the Clinton, Willow Springs and Memphis subdivisions of the Eastern division, including the Memphis terminals. **D. L. Walker** has been appointed assistant general foreman, bridges and buildings and water service at Ft. Smith, with jurisdiction over the Central division.

MISSOURI PACIFIC—L. L. Wallis, division engineer at Kansas City, Mo., has been transferred to the Eastern division, succeeding **W. W. Salisbury,** assigned to other duties. **C. E. Cherry,** division engineer of the Joplin and White River divisions, at Nevada, Mo., has retired, effective May 1. **J. H. Greason,** has been appointed division engineer of the Central division at Wichita, Kan., succeeding **P. P. Wagner, Jr.,** who has been transferred to Memphis, Tenn., to replace **L. P. Jones,** retired. **P. D. Tracy,** division engineer at Coffeyville, Kan., has been transferred to the Kansas City Terminal division, Kansas City. **J. E. Martin,** assistant division engineer at Kansas City, has been transferred to the Louisiana division with headquarters at Monroe, La.

PENNSYLVANIA—J. E. South, assistant chief engineer, structures, has been appointed to the newly created position of system engineer, structures. **C. J. Code,** assistant chief engineer—tests, has been appointed to the newly created position of assistant chief engineer, staff. **J. J. Clutz,** manager research and development, has been appointed to the newly created position of director of research on the staff of the vice president, operations. All have headquarters at Philadelphia.

The position of engineer structures on the various regions has been abolished. **J. A. Jorlett,** engineer structures at Baltimore, has been appointed area engineer—structures, at Philadelphia. **R. J. Clarke,** engineer structures at Philadelphia, has been appointed area engineer—structures, with the same headquarters. **F. D. Day,** engineer structures at New York, has been appointed area engineer—structures at Pittsburgh. **H. P. Greene,** engineer structures, at Buffalo, has been appointed area engineer—structures, at Chicago. The position of area engineer—structures is newly created.

Earl Watson, supervisor of structures at Altoona, Pa., has been transferred to Williamsport, Pa., succeeding **James E. Blake** who has been transferred to New York.

Leonard P. Ruch, track supervisor at Olean, N. Y., has been transferred to Crestline, Ohio. He is succeeded at Olean by **Maynard W. Krug,** supervisor of methods and cost control at Buffalo.

ROCK ISLAND—H. G. Dennis assistant general manager at El Reno, Okla., has been appointed to the newly created position of assistant engineer maintenance of way, with headquarters at Chicago.

SANTA FE—W. E. Robey, bridge construction engineer of the system, has been promoted to assistant bridge engineer, system, with headquarters as before at Chicago, succeeding **C. H. Sandberg,** whose promotion to bridge engineer system was announced in the April issue. **Wendell Wilson,** assistant engineer at Chicago, has assumed the duties of bridge construction engineer.

SOUTHERN—Norman M. Cary, division engineer at Valdosta, Ga., has been appointed general division engineer at Atlanta, Ga. **Clyde A. Stephenson,** division engineer at Hattiesburg, Miss., has been appointed general division engineer at Birmingham, Ala. **John H. Hall,** division engineer at Charleston, S. C., has been transferred to Alexandria, Va. **Dennis N. Shrum,** bridge and building supervisor at Charleston, has been promoted to division engineer with the same headquarters. **J. William McPherson,** assistant division engineer at Greenville, S. C., has been promoted to division engineer at Selma, Ala. **William H. Hoar,** division engineer at Birmingham, Ala., has been transferred to the New Orleans & Northeastern, with the same headquarters. **Rush A. Kelso,** division engineer at Atlanta, has been transferred to the Georgia Southern & Florida with headquarters at the same point. **Doyle A. Chambers,** assistant division engineer at Atlanta, has been transferred to Valdosta. **Herbert D. Minnis, Jr.,** assistant division engineer on the Alabama Great Southern at Birmingham, has been transferred to Hattiesburg.

Benjamin H. Goodwin, bridge and building supervisor at Alexandria, has had his jurisdiction extended over the Richmond division. **Robert A. M. Deal** has been appointed bridge and building supervisor at Columbia, S. C.

Sidney E. Hawkins, assistant supervisor at Asheville, N. C., has been promoted to track supervisor at Valdosta. **E. B. Packer, Jr.,** has been appointed assistant track supervisor at Anniston, Ala.

TEXAS & PACIFIC—John E. Thornton, assistant engineer at Dallas, Tex., has retired after 50 years of railway service, 42 of them with the T&P.

Biographical briefs

John S. Parsons, 56, who was recently named chief engineer of the Erie at Cleveland, Ohio (announced elsewhere on this page), graduated from Cornell University in 1925 with a degree in civil engineering and entered railroad service with the Erie in May 1926. He served as a transitman, head of corps, rodman and levelman at Meadville, Pa., and Salamanca, N. Y., until December 1932 when he was appointed general foreman at Hornell, N. Y. In April 1934 he was named assistant division engineer at Salamanca, later being transferred to Buffalo, N. Y., and thence to Huntington, Ind. In May 1940 he was promoted to division engineer at Huntington. After a leave of absence during the war, he returned to the Erie as division engineer at Marion, Ohio, in October 1945. In April 1950 he was named assistant chief engineer maintenance of way at Cleveland, the position he held at the time of his recent promotion.

Lawrence H. Jentoft, 60, who was recently named assistant chief engineer maintenance of way—system of the Erie at Cleveland, Ohio (announced elsewhere on this page) graduated from Tri-State

(*Continued on page* 60)

John S. Parsons
Erie

Lawrence H. Jentoft
Erie

Now... controlling vegetation is easier-cheaper-

with **UREABOR®** weed and grass killer

UREABOR can prove to be your most practical way of keeping any area weed-free! It offers all the features you want in a weed killer... convenience, safety, economy, and lasting effectiveness. With this granular dust-free material, one easy application—dry—at low rates of 1 to 2 lbs. per 100 sq. ft. gives you full season control.

UREABOR is a specially compounded formulation of sodium borates and substituted urea. It is a highly efficient weed killer that is nonflammable, noncorrosive to ferrous metal, and nonpoisonous when used as directed. It is always ready for use; there is nothing to mix—no water to haul.

UREABOR can be applied to small areas by hand. For treating larger areas, special spreaders in hand-operated and power-driven models are available.

UREABOR can protect your timber structures, yards, signals, and buildings from fire-hazardous weeds easier and cheaper than any other way we know. Write for more information.

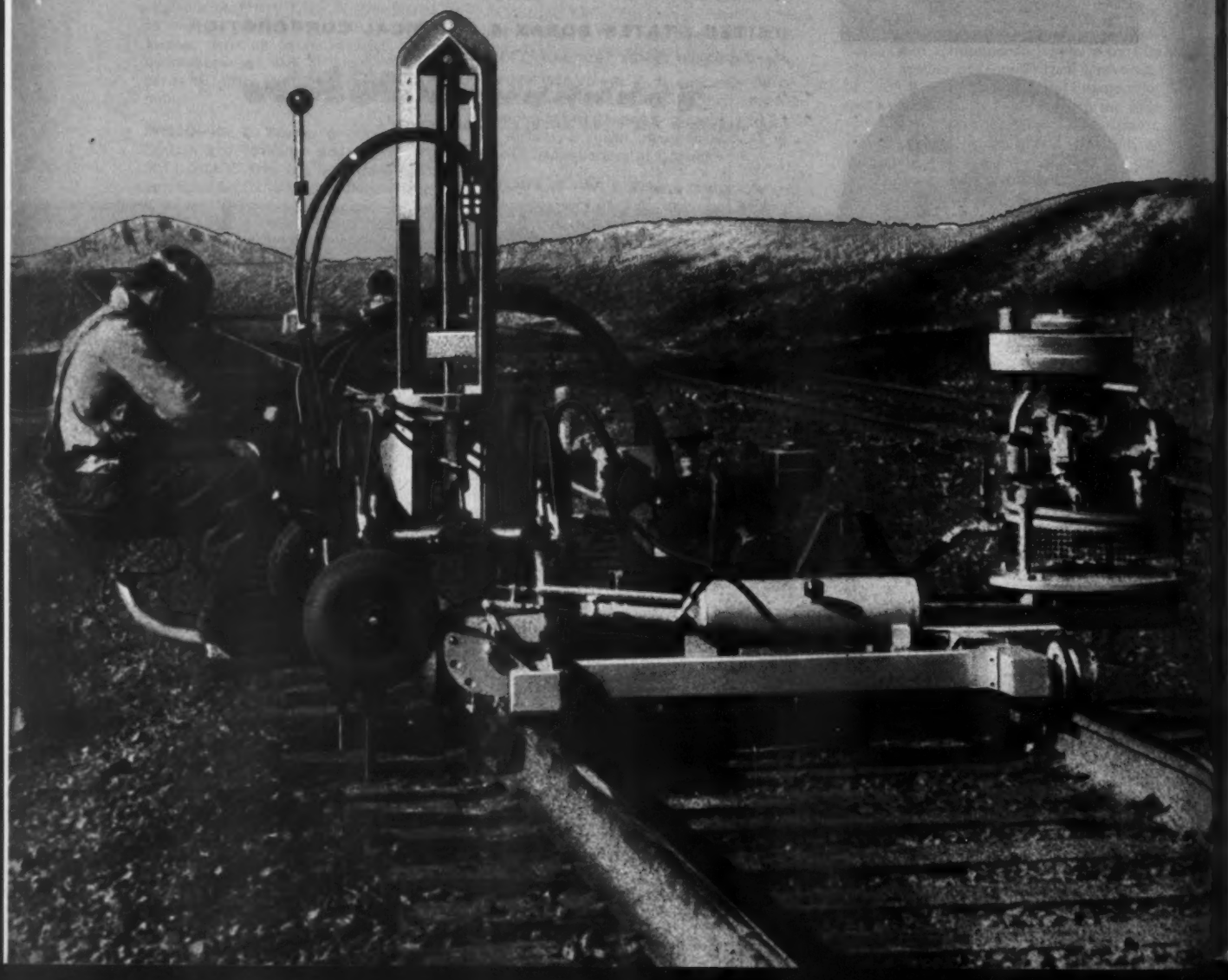
UNITED STATES BORAX & CHEMICAL CORPORATION

Pacific Coast Borax Company Division

630 SHATTO PLACE • LOS ANGELES 5, CALIFORNIA

Control of vegetation for a full year in areas such as this can now be accomplished for as little as 30¢ per 100 sq. ft.

Now . . . you can spot tamp at lower costs with

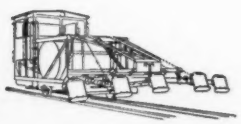


Fairmont

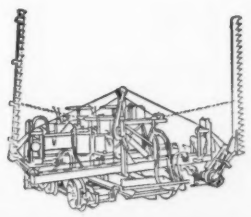
THE FAIRMONT W99 SPOT TAMPER (illustrated on the left) raises low joints to track level quickly and easily. It is a lightweight, self-propelled riding type unit operated by one man. Actual tamping is done by air with hydraulic power for accurate control of the guns. For long service life and reduced operating expenses, the guns stop automatically when raised and start automatically when lowered. It's versatile, too! The W99 can be turned easily in a matter of minutes to work the opposite rail. Modernize and mechanize your maintenance crews with the Fairmont W99 Spot Tamper.

Other Fairmont

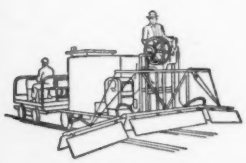
Maintenance Equipment



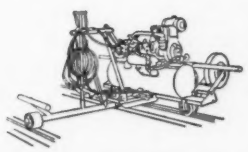
W55 SERIES C WEED BURNER is a thorough and efficient weed killer and snow melter. Burner heads can be positioned quickly and easily. Intense flame destroys vegetation regardless of roadbed contour.



W24 SERIES A WEED MOWER features cutting bars which are hydraulically operated by an engine-driven pump. Sickles are driven by hydraulic motors. Safety snap-sickle design. Includes power grinder.



W78 SERIES B WEED SPRAY CAR is a trailer type unit which applies liquid weed killers. Lightweight, compact, low cost. Two-cylinder engine, 1,000 gallon tank and 11-nozzle spraying. Efficiently designed and soundly built.



W72 SERIES A OIL SPRAYER is a compact, efficient unit requiring a minimum crew for operation. Applies clean, heated oil—under pressure—to both sides of angle bars. Four-cycle, single-cylinder engine; thirty gallon tank capacity.

FAIRMONT RAILWAY MOTORS, INCORPORATED
FAIRMONT, MINNESOTA

MANUFACTURERS OF BALLAST MAINTENANCE CARS, DERRICK CARS, OIL SPRAY CARS, GROUTING OUTFITS, TIE RENEWAL EQUIPMENT, RAIL RENEWAL EQUIPMENT, WEED CONTROL EQUIPMENT, HY-RAIL CARS, TRACK MOTOR CARS, PUSH CARS AND TRAILERS.

Helps from Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

HARDENED CUTTING EDGES. The advantages of the Hi-Electro hardened cutting edges for scrapers and bulldozers are featured in a new eight-page, two-color booklet. Illustrated throughout with photographs and drawings, this booklet describes the testing and manufacture necessary to develop these cutting edges, as well as the depth and configuration of hardness brought about by the specially developed heat-treating process. (Write: *Caterpillar Tractor Company, Dept. RTS, Advertising Division, Peoria, Ill.*)

STORY OF WOOD. Entitled "The Wonder Wood," a 16-mm color film, with sound, is now available for showing before interested groups. Completed in April 1958 after several years of work, the film deals with the qualities of wood and tells the story of pressure wood preservation. It was developed for use on educational TV. Showing time: 21 min. (Write: *Joseph M. Bray, Osmose Wood Preserving Co., Dept. RTS, 980 Ellicott Street, Buffalo 9, N. Y.*)

LINE INDICATOR. The advantages of the Nordberg Line Indicator and its proper use are described in a four-page bulletin designated No. 282. Photographs, drawings and a chart are employed to help the reader follow the operating procedures that are described and the method of plotting a curve for determining the required ordinates. (Write *Nordberg Manufacturing Company, Dept. RTS, Milwaukee 1, Wis.*)

TRACK RAISING. The new approach to track raising, as made possible by the Nordberg Trak-Surfacer, is described in a two-page bulletin designated No. 283. Illustrations show the complete unit, as well as the Tamping Power Jack which teams with the Trak-Surfacer to raise the track to the correct level without the use of a spotboard or grade stakes, and tamps the tie to hold the raise. The methods used for raising curves and making a "run-off" without visual sighting are also explained in the bulletin. (Write: *Nordberg Manufacturing Company, Dept. RTS, Milwaukee 1, Wis.*)

CRAWLER TRACTOR. The operating advantages and engineering features of the HD-6 crawler tractor are described in a new four-page catalog designated MS-1251. With the HD-6E specifications included, this new literature brings up-to-the minute HD-6 crawler-tractor information to the reader. Numerous graphs, catalog views of the tractor's principal components, and a cutaway view of the entire tractor help the reader visualize the text matter of the new catalog. (Write: *Allis-Chalmers Manufacturing Company, Dept. RTS, Tractor Group, Milwaukee, Wis.*)

MOTOR GRADERS. The Adams line of seven motor-grader models is described in a comprehensive 24-page catalog, designated "Go-power." Liberally illustrated with action photographs, charts, line drawings and cutaways, this catalog covers in detail such items as the speeds available, mechanical features of two optional diesel engines, transmissions, drives, operating controls, construction advantages, the wide range of blade positions, and work capacities. The specifications for each of the seven models are given in detail. It also illustrates and describes the many units of optional equipment available for increasing the versatility of these motor graders. (Write: *LeTourneau-Westinghouse Company, Dept. RTS, Peoria, Ill., or to your nearest local distributor.*)

ROOF VENTILATORS. Designated Bulletin 2301, a new eight-page, two-color booklet describes the features of several types of roof ventilators. It also presents suggested specifications, line drawings with dimensions, and a table showing ratings of the ventilators under differential pressures. (Write: *ILG Electric Ventilating Company, Dept. RTS, 2850 N. Pulaski Road, Chicago 41, Ill.*)

Congratulations: *Charles H. Reade*

From the Entire Reade Organization for Fifty Years of Continuous Service and Leadership

READE EST. 1885

News notes...

. . . a résumé of current events throughout the railroad world

Early on May 11, members of the Brotherhood of Locomotive Firemen & Enginemen walked off their jobs on the Canadian Pacific. The strike was in protest against the railroad's action in removing firemen from diesel locomotives operating in yard and freight service. At 11:59 pm, May 13, the strike came to an end under a settlement based on gradual removal of firemen from yard and freight operations. The plan adopted is very similar to one the railroad had proposed before the strike. In acting on the firemen issue, the CPR had the backing of a royal commission report, holding that firemen on yard and freight diesels were not necessary.

The CPR's victory is bound to have an effect in this country next year when contract negotiations with the BLF&E are slated to be reopened. Officers of the union indicate, however, that any attempt by U. S. roads to eliminate firemen from locomotives will encounter bitter resistance.

•

Some railroads are discouraged about the future of railway passenger business. Others are speaking optimistically about passenger-traffic prospects. For example, President Russell L. Dearmont of the Missouri Pacific, chiding other industry leaders for their lack of optimism, said his road was prepared to run passenger trains "at some reasonable loss" for their public relations value. Nor is the road going to give up its chance of getting a piece of America's $1-billion-a-year-travel market, he added. Such innovations as inexpensive tray meals and hamburgers in dining cars have gotten more people "eating on the Missouri Pacific," said Mr. Dearmont. He added, the railroad does not operate its diners to make money, but to attract people to its trains.

•

The New York Central will immediately resume its $150 million capital-improvement program if Congress approves pending recommendations for legislation to relieve the plight of the railroads. This statement was made by NYC President Alfred E. Perlman in a recent address at Detroit.

•

The world's biggest commercial office building—second in size only to the Pentagon in Washington — will soon rise on railroad-owned property behind New York's Grand Central terminal. The 50-story skyscraper, scheduled for completion in 1961, will cost $100 million. Owner of the property is the New York State Realty and Terminal Company, a subsidiary of the New York Central. Grand Central City, as the skyscraper will be called, will rise over the existing railroad tracks and will replace the six-story Grand Central Terminal office building.

•

Since March 2, coach-fare all-room sleeping cars have been bringing new passenger business to the Baltimore & Ohio. The cars—Budd-built slumbercoaches—are featured on the Baltimore-Chicago all-coach Columbian. Passengers ride for a coach fare, plus a small surcharge for the room space. During the first week of operation the cars averaged only about 18 occupants. This figure moved up the second week. At the end of six weeks an average of 31 spaces was being sold.

AGRONYL R WEED CONTROL

A 12,000 TRACK-MILE COST STUDY...

DAKOTAS TO TEXAS ★ WYOMING TO ILLINOIS

Two railroads, covering large areas in the North and South Central Regions of the United States, continue to prove the benefits of yearly maintenance programs for weed control. These programs, built around the use of aromatic oils—Agronyl R, have been in effect the past several years, providing economical control of vegetation each year and are being continued unchanged for the present season. Examples of the costs of using Agronyl R in 1957 are shown at right.

★

For complete information on an Agronyl R Weed Control Program including equipment, usage and application data, contact Socony Mobil Oil Company, Inc., Railroad Division, 150 East 42 St., New York 17, N. Y., or 59 East Van Buren Street, Chicago 5, Illinois.

RAILROAD A—NORTH CENTRAL

Miles Treated (approximately)	6,000
Cost of Agronyl R	$55,000
Material Cost/Mile	$9.16
Total Cost/Mile/Application (including labor and other expenses)	$14.87
Total Cost/track mile/season	$16.20

RAILROAD B—SOUTH CENTRAL

Miles Treated (approximately)	6,000
Cost of Agronyl R	$92,676
Material Cost/Mile	$15.44
Total Cost/Mile/Application (including labor and other expenses)	$21.43
Total Cost/track mile/season	$39.99*

*Includes up to 4 applications in 300 day growing season in Gulf Coast areas.

Mobil

RAILROAD PRODUCTS

SOCONY MOBIL OIL CO., INC., and Affiliates:
MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

Cut Your Material Handling Costs
with an Athey Track Cleaner

Modern roads and yards call for streamlined material handling at the lowest possible cost. That's the job for an Athey Track Cleaner because this high production unit works at a fraction of the cost of other machines and methods, to put all your loading on an assembly-line basis. In addition to cleaning tracks, the 125-18TC also takes the cost out of stockpile loading of free-flowing materials, snow removal, loading and unloading gondolas, and many other expensive loading jobs.

High capacity and the special features of this machine reduce loading and maintenance costs. On track it cleans both track and inter-track. The extra wide tread eliminates inside tire wear. It cleans the full length of ties, too. Off the track it sets new levels of production in stockpile work. The 18-foot Swiveling Discharge Conveyor swings 55° to right or left — is high enough to load any car.

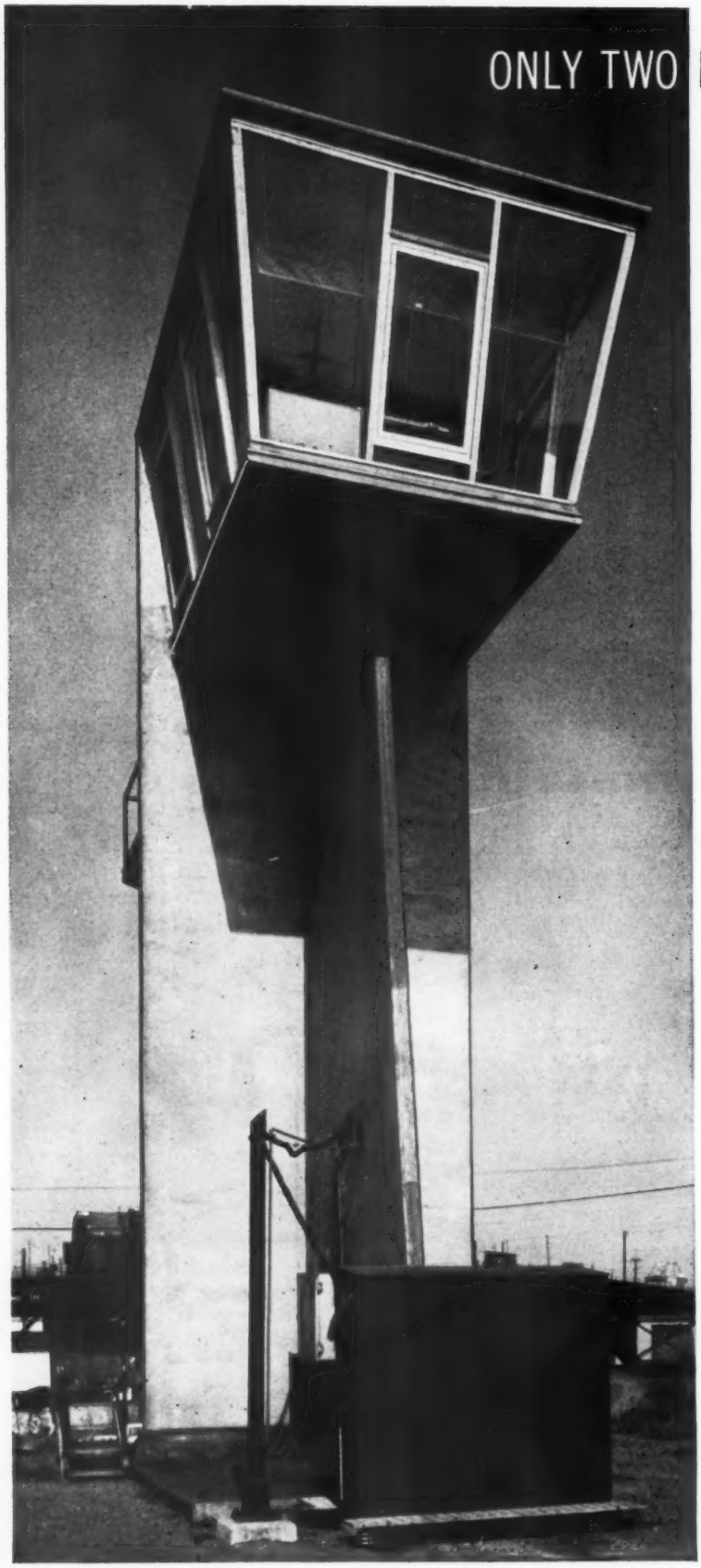
Your Athey-Caterpillar Dealer can give you all the facts on high capacity, low cost track cleaning. See him soon or contact Athey Products Corporation, 5631 West 65th Street, Chicago 38, Illinois.

Athey 125-18TC cleans track quickly and completely in one pass.

We Ship by Rail

Athey

LOADERS . . . BY THE LEADERS



ONLY TWO DAYS TO PUT UP...

C&O'S NEW PRESTRESSED CONCRETE TOWER

Chesapeake and Ohio built this retarder tower with precast, prestressed concrete. A foreman and 4 men with a 25-ton crane put it up without interfering with track operations.

This structure will stay modern looking and last for many years, even under corrosive yard conditions. And except for washing the windows there's practically no maintenance! All conduits for the service leads were cast right in the pylon slabs. This tower is another example of how progressive railroads are using concrete to build for economy . . . for durability . . . for efficient operation.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

FOR STRUCTURES... MODERN **concrete**

this is an **orton** *160-ton diesel wrecker* **but...**

EVERY ORTON CRANE has:
... **ALL** power shafts carried on sealed anti-friction bearings—NO exceptions.
... **ALL** motion entirely independent.
... NO jaw clutches—not even in travel mechanism.

today *it's driving piles!*

ORTON VERSATILITY is exemplified by this *combination* diesel wrecker-pile driver. *YOUR* machine, built to *your* requirements . . . delivered for *less* than a "production line" crane!

ORTON EXPERIENCE always gives you the very latest *proved* design. ORTON, in more than fifty years of building the finest cranes, has been *first* with Torque-Control, *first* with air-operated controls, *first* to recognize that each handling job is unique.

So, when you consider cranes, consider ORTON *first* . . . it *is* first!

orton

CRANE AND SHOVEL CO.
608 S. Dearborn Street
CHICAGO 5, ILLINOIS

THE MOST POWERFUL NAME IN CRANES

WANT HELP IN KEEPING ACCIDENT COSTS DOWN—

RIGHT-OF-WAY CREWS ON TARGET—AND ON TIME?

AJAX Drinking Water Service offers

3 BIG ADVANTAGES FOR TRACK MAINTENANCE GANGS

1 AJAX Cups and equipment provide the cleanest, safest and most time-saving way to take clean, fresh water to gangs working on the right-of-way.

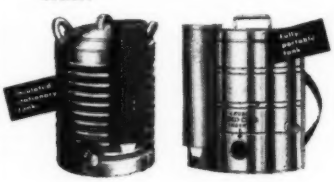
2 Crisp, clean AJAX Cups reduce the risk of spreading infections, like the common cold, that cause lost days . . . and thus help you keep important maintenance work on schedule.

3 The safety messages imprinted on AJAX Cups (at no extra cost) provide frequent reminders that help prevent accidents — another source of lost time and extra costs.

AJAX Complete Drinking Water Service was developed out of long experience with railroad work. It is ideally suited to the needs of track maintenance work . . . actually works three ways to help you save time, maintain schedules, and cut operating costs.

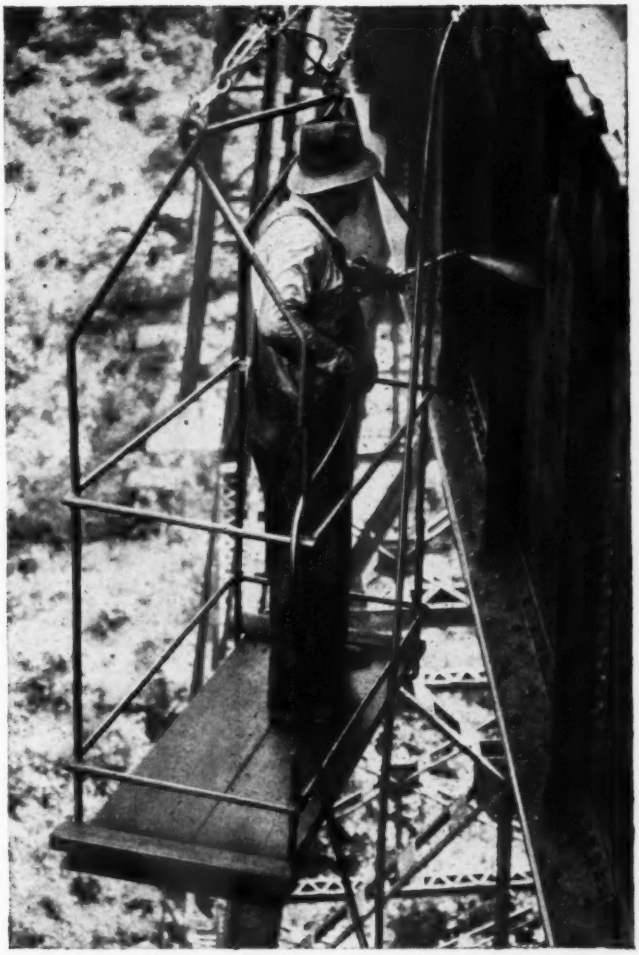
WRITE TODAY **for samples of imprinted AJAX Cups and new folder giving details of this complete drinking water service.**

AJAX® CUPS — wedge-shaped, easy to hold—dispense open, ready to drink from; come in 4, 6 and 7 oz. sizes, imprinted with assorted stock safety messages at no extra cost — or your own message to order.



United States Envelope Company

General Offices: **Springfield 2, Massachusetts** *15 Divisions from Coast to Coast*



One large railroad recently sprayed a bridge with Dearborn NO-OX-ID at a cost of only $15,000. It formerly cost $144,000 to paint this bridge by conventional methods. They will never paint another bridge! Are you interested in savings like this? Mail the coupon.

FOR LONG-TERM PROTECTION

Dearborn NO-OX-ID®

Dearborn Chemical Company
Dept. RTS-NO, Merchandise Mart Plaza
Chicago 54, Ill.

Please send information on bridge spraying with Dearborn NO-OX-ID.

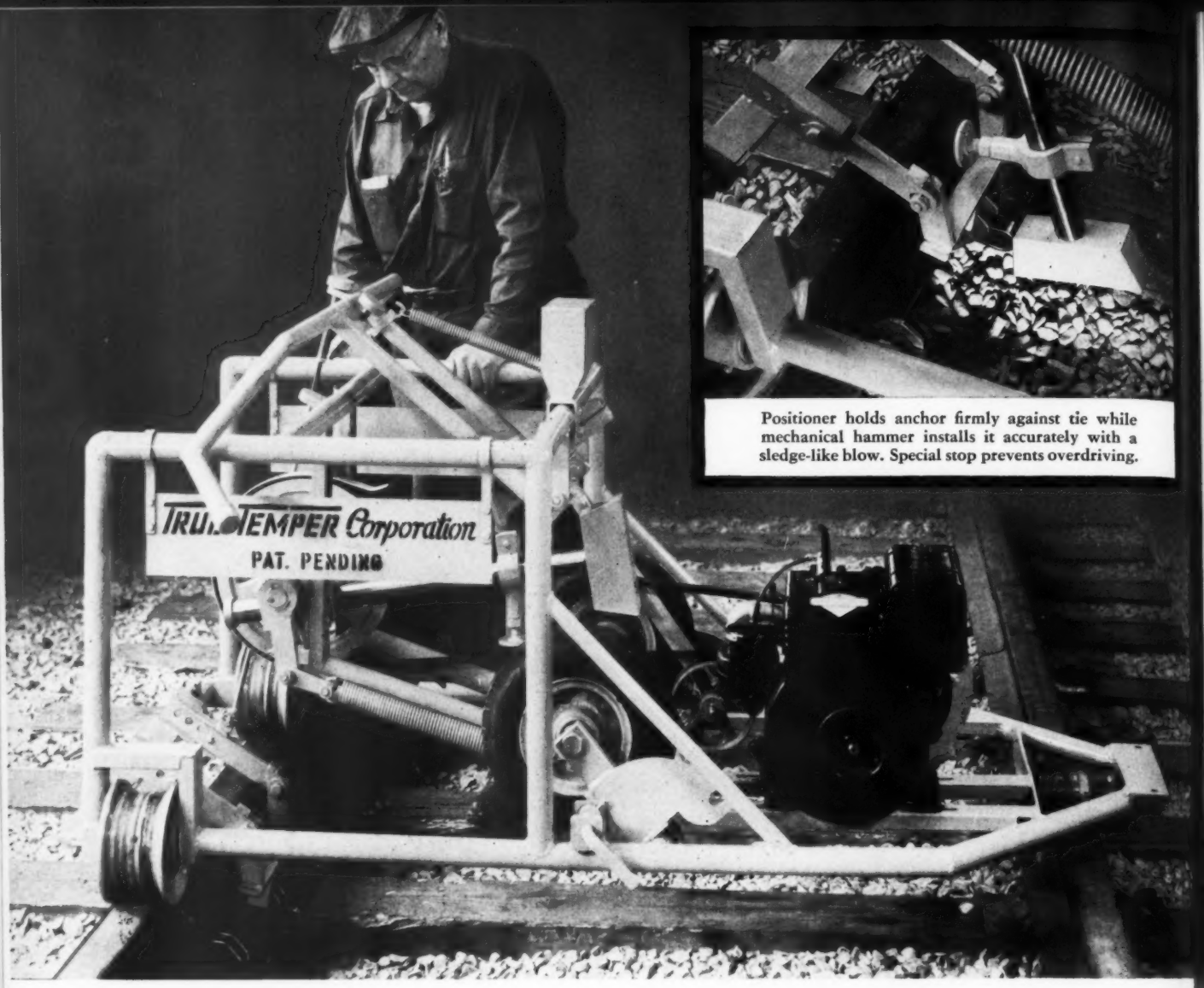
Name.....*Pos*.....

Railroad.....

Address.....

City.....*Zone*....*State*.....

Manufacturing plants in CHICAGO • LINDEN • LOS ANGELES • TORONTO • HONOLULU • HAVANA • BUENOS AIRES



Positioner holds anchor firmly against tie while mechanical hammer installs it accurately with a sledge-like blow. Special stop prevents overdriving.

Mechanical driver and Bulldog anchors give you

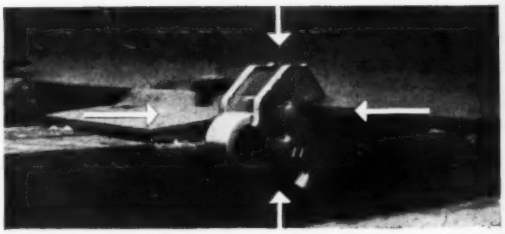
ALL THE HOLDING POWER YOU'RE PAYING FOR

True Temper's new mechanical anchor driver makes sure you get full benefit of the BULLDOG anchor's tremendous holding power.

Essentially a mechanized sledge hammer, the new driver weighs only 425 pounds. It positions each anchor snugly against the tie, then installs it quickly and uniformly to give you all the holding power you're paying for.

Because of its one-man operation, light weight and retractable setoff wheels, the mechanical driver is a fast, flexible, cost-cutting machine. Its speed and simplicity made it a top favorite at the National Railway Appliances Exhibition in Chicago.

Be sure you get the full story on BULLDOG rail anchors and machine application as pioneered by True Temper. Contact your True Temper representative, or write True Temper, Railway Appliances Division, 1623 Euclid Avenue, Cleveland 15, Ohio.



BULLDOG anchor has two-way grip

Two elements in the BULLDOG anchor — a resilient steel spring and a double-jawed clamp of hardened steel — create a positive two-way grip that actually multiplies and sustains holding power. Factory-assembled as one unit, the anchor is easy to ship, handle and install.

OTHER TRUE TEMPER RAILWAY PRODUCTS: Track Shovels • Ballast Forks • Weed Cutters • Hammers • Sledges • Scythes • Safety Rail Forks

TRUE TEMPER® BULLDOG RAIL ANCHORS

YOU CAN LOOK TO TT FOR LEADERSHIP

What kind of tie-renewal gang?

When mechanizing its tie renewals a railroad has important decisions to make. It has to decide what combination of machines and men will give the best results under the particular conditions that it has to contend with.

This article will be helpful to those who still have such decisions to make. Based on an address by F. L. Etchison, chief engineer of the Western Maryland, it outlines three general types of mechanized tie-renewal organizations, each designed to fit a particular set of conditions. Suggestions are made for variations in the basic types to adapt them to local conditions.

• In making decisions bearing on the mechanization of tie renewals, "it is impossible to select a standard procedure for all to follow which will produce the best results under all conditions."

This statement was made by F. L. Etchison, chief engineer of the Western Maryland, in a recent address on "Mechanized tie renewals." He was speaking at New York before a meeting of the Metropolitan Maintenance of Way Club.

Conditions, he explained, "vary almost endlessly from time to time and from district to district, depending upon the number of tracks, traffic, tie-renewal cycles, financial conditions, managerial policy, and other factors . . ." In fact, he said, many roads use different procedures on different territories.

In discussing this subject, Mr. Etchison was speaking partly from his experience as chairman of Standing Committee No. 2—Track—of the Roadmasters' Association. At the association's 1957 convention this committee presented a report on mechanized tie renewals, which was based in part on a survey of practices among the committee's members. The objective was to develop a pattern "which could be used to set up some type of force to take care of different traffic conditions . . ." In his address Mr. Etchison indicated that his remarks were based to a considerable extent on the committee's report.

The average cycle for out-of-face tie renewals was found to be 4½ years. Fifty per cent of the roads reporting perform their out-of-face tie renewals in conjunction with tamping operations. The other 50 per cent carry out tie renewals either in alternate years (20 per cent) or some distance ahead of and separate from ballasting operations (30 per cent.)

On the basis of its findings and experience the committee recommended three basic types of forces which, it felt, could be altered to fit the requirements of each railroad. These three types, together with information on organization, equipment and performance, are:

(1) A mechanized tie renewal gang using a minimum of on-track equipment.

This gang, explained Mr. Etchison, is intended for use on heavy-traffic and/or single-track lines where equipment must clear for trains at frequent intervals. It is not contemplated that it will be used in connection with tamping operations. "This organization," continued the speaker, "is based on the assumption that the track will be surfaced out-of-face the following year. Therefore, no raise is given the track, which means that close supervision must be exercised to insure there is no humping of the track where ties are inserted.

"The equipment consists of a portable spike puller, tie remover, nipper, portable spike driver, and portable tamping guns, but substitution of any other type equipment which might be on hand, or preferred, or which does the same work, is optional.

"The personnel consists of a foreman and 16 men, not including flagmen. However, if the number of renewals warrants its use, a tie inserter may be used with no change in the number of men.

"Organizations similar to this have been used effectively and have experienced no difficulty in handling tie renewals on a territory of 150 miles. Using this method during 1956, one railroad renewed an average of over 14 ties per man-day at a cost of slightly over $1.00 per tie. At the same time, on a nearby territory, a gang consisting of a foreman and 21 men, using manual methods, averaged 7½ ties per man-day at a cost of approximately $1.80 per tie.

Use of off-track equipment

"I understand that, in the near future, an off-track tie remover and inserter will be placed on the market. In that event, where roadway width permits its use and that of off-track spiking and tamping equipment, it may soon be feasible to operate such a gang with all off-track equipment. This would make the above gang even more adaptable for use on single

"It is important that distribution of the ties ahead of tie-renewal operations be made in such a manner that minimum handling of ties is necessary to make them ready for insertion. Distribution by work trains, either in bundles or by mechanical tie unloaders or special tie cars, has made it possible to reduce the cost of such handling. I expect to see further development in this field during the next few years."

track where trains operate at such frequent intervals that it would be impractical to utilize heavier and more extensive on-track equipment."

(2) A gang using a maximum of tie-renewal equipment.

Like the first organization described, this set-up is for situations where tie renewals are not integrated with ballasting. It is recommended for use, according to Mr. Etchison, where it is desired to perform ballasting operations in alternate years, or where tamping is done at a sufficient distance behind tie renewals to permit a work train to unload ballast between the two operations. It is designed for use where the track can be had for extended periods of time, either by rescheduling or rerouting of most trains.

Equipment for this organization consists of a ballast regulator, spike puller, rail lifter, tie remover, tie-bed scarifier, tie inserter, spiker-nipper and tamper. The personnel includes a foreman and 17 men.

"The ballast regulator" explained Mr. Etchison, "is used early in the day to break ballast away from one end of the ties to facilitate their removal. It is moved to the rear of the gang later in the day, where it is used to bring the ballast section to a finished appearance. The tie remover may be replaced by two tie saws, plus tie plunger, or when tie renewals are especially heavy, the tie remover and tie inserter may be replaced by two single machines which perform both functions.

"The rail lifter is used to allow tie plates to be removed with a minimum of disturbance of the tie bed. Use of a tie-bed scarifier is optional. Where there is extreme plate cutting of ties, it may be necessary to 'peel' or adze plate-cut ties to avoid humping the track when plates are removed. The cost of tie replacement by this method is approximately $1.00 per tie."

(3) A large gang with a maximum of tie-renewal and ballasting equipment working together.

The equipment for this gang consists of one or two ballast regulators, spike puller, tie-bed scarifier, tie inserter, spike driver, power jack, jack carrying car, one or two tampers, and lining machine. The total personnel varies from 24 to 36 men, including a mechanic.

"Such an organization," said Mr. Etchison, "should be used where use of the tracks can be had for extended periods of time by rerouting or rescheduling of most trains. It makes for a more flexible operation, and for the maximum utilization of all types of equipment in order to effect the greatest possible production at the lowest cost.

"Production of over 3,000 ft of main track surfaced per day while renewing 300 to 450 ties per mile is not uncommon with this organization. On light-traffic or branch lines the respective production figures are over 4,000 ft and 400 to 500 ties.

"If preferred, the tie remover and tie inserter may be replaced by one or more combined removing and inserting units, in which case the scarifier is also eliminated. Likewise, the tie remover may be replaced by two tie saws plus a tie-end pusher. The lead ballast regulator is equipped with a special wing to plow ballast away from one end of the ties. It works ahead of the gang during the morning hours, getting far enough ahead to be able to double back and perform a dressing operation later.

"The second ballast regulator should be equipped with a paving scarifier which breaks up the paving in grade crossings. This regulator, or if desired, ballast distributor, uniformly plows ballast in from the ends of the ties where it is unloaded, or distributes ballast on the track section. A special attachment to the ballast regulator cuts jack holes. The spiker-nipper may be equipped with an air impact wrench to remove drive screws from wood guard rails of grade crossings.

"For use in the surfacing operation there has been developed a self-propelled power jack with a wire surfacing attachment which can replace most of the jacks and jack car. In some instances, only a power jack is used.

"The entire operation is under the direction of a supervisor or an assistant supervisor. The total number of men assigned to various operations may have to be changed or rearranged to meet specific conditions, i.e. density of tie renewals, type of equipment, amount of raise, use of special fittings, tie pads, hold-down devices, and tie coatings.

"This organization is reported to have produced 3,000 to 4,000 ft of timbered and ballasted track per day (depending on traffic density), renewing an average of 450 ties per mile.

"From information gained from the reports of other railroads and my own experience, I find that the average daily production of a large, combined timbering and surfacing gang, fully mechanized, is as follows:

"(1) On heavy-traffic main lines, 12 ties per man-day using mechanized forces, as compared to 7 ties per man-day using manual methods, an increase in production of 70 per cent.

"(2) On light-traffic main lines, 14 ties per man-day, as compared to 8 ties per man-day, an increase of 75 per cent.

"These savings are so real that it makes it essential for those not now using mechanized equipment to take the necessary steps to acquire the type of machines best suited for their particular needs.

"What is being done today has already proven practical. However, we must not become complacent, but constantly be on the lookout for new ideas or improved methods which will tend to give additional economies."

"While emphasis has been placed on high production in order to reduce unit cost, this factor should not be allowed so much influence that quality of work suffers. In other words, no one should try to break records by getting the old ties out and the new ones in without regard for the condition that the track is left in. If such is the case, it is possible that enough will be spent correcting the condition of the track that the result will be a loss instead of a gain. Mechanized tie-renewal gangs, properly operated, should show enough economy to justify their use without trying to stretch their performance to such an extent."

How the M&StL got a

Tighter grip on M/W inventory

The need for keeping close control over maintenance-of-way materials has attained a new importance. This has resulted in the need for improved methods of accounting. On the M&StL this problem has been met by the introduction of a simplified and mechanized accounting system. The plan not only pinpoints shortages and excesses of items on a month-to-month basis, but has also enabled the road to cut its M/W inventory in half.

By **B. T. Rodgers**
Vice President & Comptroller
Minneapolis & St. Louis
Minneapolis, Minn.

• Our inventory investment in maintenance-of-way materials at the end of 1957 was $1,600,000. Four years before it was $3,300,000. Cutting this investment in half was made possible by simplifying and mechanizing our accounting procedure. This permitted our road to control the buying, transferring and allocation of our materials on an efficient basis. The new accounting system also has resulted in very substantial reductions in clerical work.

The new system was proposed and installed in 1954. It was the result of a comprehensive survey made in the summer of that year by the public accounting firm of Arthur Andersen & Co. The objective of this review was to make an appraisal of the railroad's present system and to make specific recommendations for the modernization of all accounting policies and procedures.

The former accounting system was inadequate for present-day operations. Common deficiencies were: Excessive clerical costs in handling inventory paperwork; lack of monthly reports on the status of the inventory; the physical inventories and material usage were priced at the latest prices, which resulted in substantial overstatements or understatements of the inventory; and the location of important material could not be readily determined, resulting in a larger investment in inventory.

Installing the system

The first step was to prepare a comprehensive detailed catalog of all materials and supplies used in the day-to-day operation of the railroad. In developing the catalog, inventory classes were established based on our own requirements rather than AAR classes. An M&StL stock number, containing six digits, was assigned to each item. The first two digits designate the class, the third the subclass, and the last three the part number (Exhibit 1).

Specific forms were developed for inserting the description and price of each item. These forms were then keypunched and the catalog was prepared mechanically on continuous form multilith mats processed through an IBM 407 accounting machine. The catalog contains approximately 25,000 separate items and consists of approximately 1,000 pages.

On November 1, 1955, a physical inventory was taken of all materials and supplies. M&StL stock and location numbers were assigned each item. Next, the location number, stock number and quantity of each item were keypunched and priced mechanically and the beginning inventory for mechanized procedures was completed.

Month-to-month procedures

Each month the section foreman responsible for a particular inventory location prepares the necessary reports to reflect the particular month's usage or activity. Forms have been developed for material usage reports, material returns to stock, salvage, transfers and adjustments (Exhibit 2 next page).

Material receipts at a particular location are handled in two ways. One would be a transfer from another location or storeroom, in which

MATERIALS AND SUPPLIES CATALOG — SUB CLASS 3

THE MINNEAPOLIS & ST. LOUIS RAILWAY COMPANY

DESCRIPTION OF MATERIAL	UNIT OF ISSUE	STOCK ITEM NUMBER
FROG, SOLID MANGANESE, ISC 8531, #5, 4 FT 11 IN, NO SPECIFICATIONS	EA	58 3010
FROG, SOLID MANGANESE, ISC 8531, #6, 5 FT 3 IN LONG, WITH PLATES, PER PMC 813703, MSL DWG 59-48-24J	EA	58 3015
FROG, SOLID MANGANESE, ISC 8531, #7, 6 FT 2 IN LONG, WITH PLATES, PER PMC 9285, MSL DWG 59-48-20F	EA	58 3020
FROG, SOLID MANGANESE, ISC 8531, #7, 6 FT 2 IN, WITHOUT PLATES, SH	EA	58 3021
FROG, SOLID MANGANESE, ISC 8531, #7, 8 FT 10 IN, WITHOUT PLATES, SH	EA	58 3026
FROG, SOLID MANGANESE, ISC 8531, #7, 9 FT 2 IN, NO SPECIFICATIONS	EA	58 3030

EXHIBIT 1—First step in setting up the new inventory accounting system was the preparation of a detailed catalog of materials and supplies. This is a typical page from the 1000-page catalog.

Tighter grip on M/W inventory

case the transferring location makes out a transfer ticket. The second method would be by direct purchase. When the vendor's invoices are processed, the inventory purchased is charged to a specific location at actual cost. The price used for each inventory item is the cost plus freight. At the end of the month, if materials are received but not vouchered, unvouchered receipts are handled on the same basis using system average prices.

Each month the material transaction reports are keypunched, verified, mechanically priced at the system average price, and extended by an IBM 604 calculator. The distribution to a particular operating account on substantially all of the inventory is predetermined. In other words, the particular ICC account that a particular inventory item is normally charged is predetermined. The only changes required are those for differentiating between charges to yard tracks, passing tracks or main line.

For an inventory item such as lumber, which could be used for different purposes, the account distribution is assigned in the accounting department just prior to processing by the machine department.

Use work order for AFE's

If the material used is for a capital project, designation is made on the usage report of a specific work order number instead of an account.

Store-loading expense is calculated on a flat percentage to all material usage by the use of a 604 calculator, and follows the same distribution as the actual material.

The material transactions are then listed in material distribution journals for subsequent processing in the monthly general accounting records.

Material transaction cards, plus the material receipt cards, are then combined and sorted by stock numbers and location. The balance of each item at the beginning of the month is added, and a materials and supplies ledger is prepared by inventory location (Exhibit 3). This ledger shows the balance at the beginning of the month of each item, receipts, issues and transfers and the balance at the end of the month.

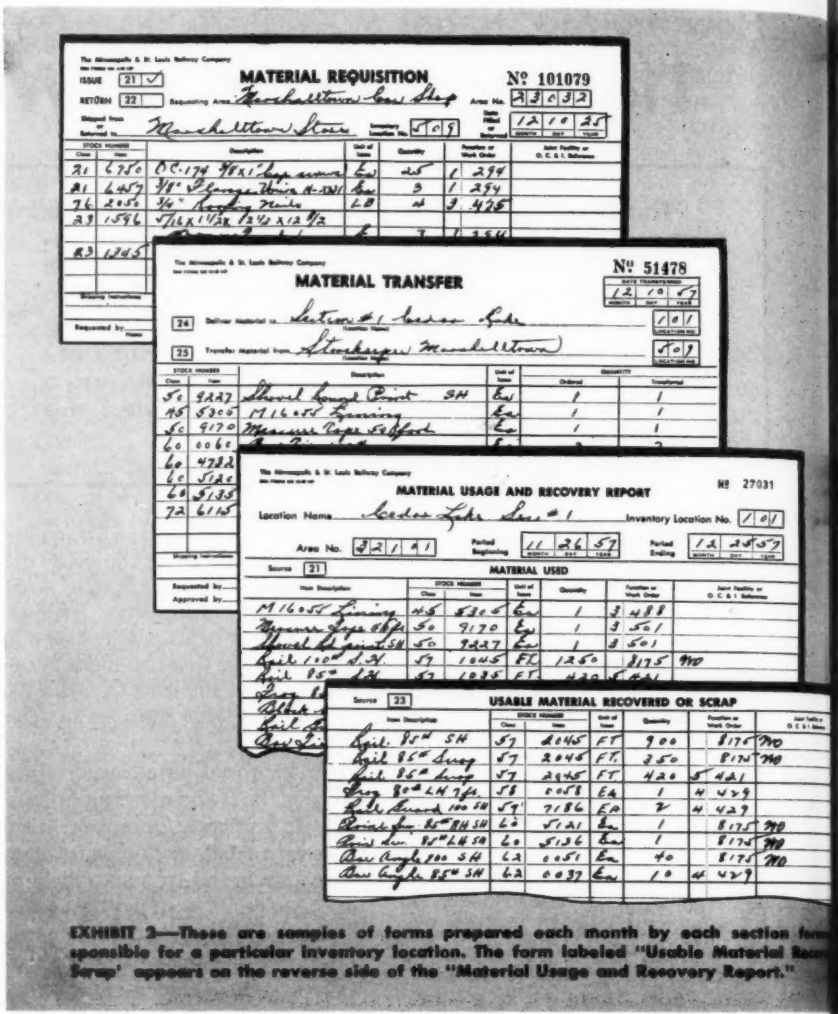


EXHIBIT 2—These are samples of forms prepared each month by each section foreman responsible for a particular inventory location. The form labeled "Usable Material Recovered or Scrap" appears on the reverse side of the "Material Usage and Recovery Report."

Monthly reports on material transactions

The cards are then resorted by individual items for all locations and a materials and supplies control report is prepared (Exhibit 4). This report shows the quantity of a specific item at each location systemwide. Among other things it includes usage year to date, date of last issue, system average and a summary of the current month's activities by location.

Next, a location summary is prepared. This shows the total dollar value of inventory by location as compared to the previous month. Next, a class summary is prepared. It shows the dollar value of each class of inventory, comparing the balance with the previous month's balances.

After these reports are prepared, new system balance cards are prepared and a new system average price is calculated, at which time a comparative price report is prepared. This comparative price report compares the prior month's system price with the new system average price. It is used principally to detect any errors that may creep in from miscoding or erroneous inventory prices.

Material usage reports are cut off at the 25th of each month. By the 10th of the following month the reports are issued to the operating department and to each person responsible for a portion of the inventory.

Ties handled differently

Tie inventory controls present a special problem. Ties are generally

THE MINNEAPOLIS & ST. LOUIS RAILWAY COMPANY — FORM M 2

MATERIALS & SUPPLIES LEDGER

TO _____ DATE _____

DATE	TICKET NUMBER	STOCK NUMBER	DESCRIPTION	UNIT OF ISSUE	QUANTITY				BALANCE END OF MONTH	
					BEGINNING OF MONTH	RECEIPTS	ISSUED	TRANSFERRED	QUANTITY	AMOUNT
101 25 9 3 6	57606	57 2025		FT	118			72+703 72+	72- 190-	32.14- 84.82--
101		57 2030	RAIL 80 SCRAP	FT	511				511	249.33 •
101		57 2035	RAIL 85 SCRAP	FT	1,389				1,389	702.83
101 25 9 3 6	57606	57 2035		FT				282+703	282-	132.57-
101 25 9 3 6	58552	57 2035		FT				204+ 99	204-	103.22-
					1,389			486+	923	467.04 •
101		57 2040	RAIL 90 SCRAP	FT						
101		57 2045	RAIL 100 SCRAP	FT	1,702				1,702	•01--
101 23 9 5 6	11125	57 2045		FT			39-		39	1,014.44 23.29
101 23 9 5 6	11125	57 2045		FT			382-		382	228.09
101 25 9 3 6	58552	57 2045		FT				411+ 99	411-	245.41-
					1,702		421-	411+	11712	1,020.41 •
101		58 0029	FROG 70 LH 9 15FTSH	EA	1				1	102.53 •
101		58 0060	FROG 85 6 6FT SH	EA	1				1	94.78 •
101		58 0083	FROG 85 RH 7 9FT SH	EA	1				1	84.36 •
101		58 0095	FROG 85 8 6FT SH	EA	2				2	180.82 •
101		58 0110	FROG 85 RH 9 15FT	EA	2				2	315.42 •
101		58 0111	FROG 85 RH 9 15FTSH	EA	2				2	257.71 •
101		58 0121	FROG 85 RH 9 15FTSH	EA	2				2	221.54 •
101		58 0145	FROG 100 LH 7 12FT	EA	3				3	818.67
101 25 9 3 6	51265	58 0145		EA				1+107	1-	272.89-
					3			1+	2	545.78 •
101		58 0148	FROG 100 LH 7 12FSH	EA	2				2	272.89 •
			FROG 100							230.91

EXHIBIT 3—Prepared monthly, this ledger shows the balance at the beginning of the month of each item, receipts, issues and transfers and the balance at the end of the month.

THE MINNEAPOLIS & ST. LOUIS RAILWAY COMPANY — FORM M 3

MATERIALS & SUPPLIES CONTROL REPORT

TO _____ DATE _____

STOCK NUMBER CLASS	STOCK NUMBER ITEM	DESCRIPTION / UNIT PRICE	UNIT OF ISSUE	STOCK NUMBER ITEM	QUANTITY BEGINNING OF MONTH	CURRENT MONTHS ACTIVITY RECEIPTS	ISSUED	TRANSFERRED	BALANCE END OF MONTH QUANTITY	AMOUNT	ISSUED YEAR TO DATE	SYSTEM LAST ISSUED NO.	SYSTEM LAST ISSUED YR.
57	0005	RAIL 100 NEW 1.6178	FT	80	39				39	63.09			
				103	227				227	367.24			
				105	78				78	126.19			
				106	117				117	189.28			
				107	273				273	441.66			
				108	39				39	63.10		6	6
				109	54				54	87.37		5	6
				112	156				156	252.39		3	6
				113	78				78	126.19		12	5
				220	156				156	252.38		2	6
				221	156				156	252.37		12	5
				225	39				39	63.09			
				226	78				78	126.19			
				227	195				195	315.48		12	5
				228	285				285	461.07			
				229	424				424	685.95			
				230	530		351		179	289.58		7	6
				231	192				192	310.62		2	6
				232	39				39	63.09			
				461	44				44	71.18			
				909	803				803	1,299.09		2	6
					4,002		351		3,651	5,906.60	624		
57	0010	RAIL 112 NEW 1.7400	FT	230	60				60	104.40			
					60				60	104.40			
57	0015	RAIL 115 NEW 1.7924	FT	22		3,420			3,420	6,500.10		7	6
				102	273				273	489.33			
				103	401				401	722.23		2	6
						3,698						7	6

EXHIBIT 4—This report shows the quantity of specific items at each location on the system. Information shown includes usage year to date, date of last issue, and system average.

are processed to give control data

purchased green or dry and are subsequently treated and then shipped to the railroad. A special control account is used to charge the cost of green ties, freight and treating costs. When the ties are shipped from the treating plant to the railroad, transfer tickets are prepared to transfer the ties from the control account to the mechanized inventory control procedures. These same procedures are used for treated bridge lumber and piling.

One month prior to the date for physical inventories, a machine listing is prepared on the last recorded items at a particular inventory location. This is a double-spaced listing giving the stock number, unit of issue and a description of each item.

The individual taking the inventory then merely inserts the quantity count in an appropriate column. The only requirement for additional writing is in the case of an improperly described item of inventory, or where a new item is inventoried which was not previously carried in the inventory balance.

After the physical counts are made, the sheets are returned to the accounting department where the stock number, quantities, and locations are keypunched. Price cards are collated into the inventory count cards and the appropriate dollar extensions are made mechanically by the 604 calculator.

After the extensions are made, the new physical inventory is matched item for item against the book balance and a listing is made of the differences, quantity and dollars. Any large discrepencies are then investigated and the appropriate adjustments are made to correct the book balances to the physical.

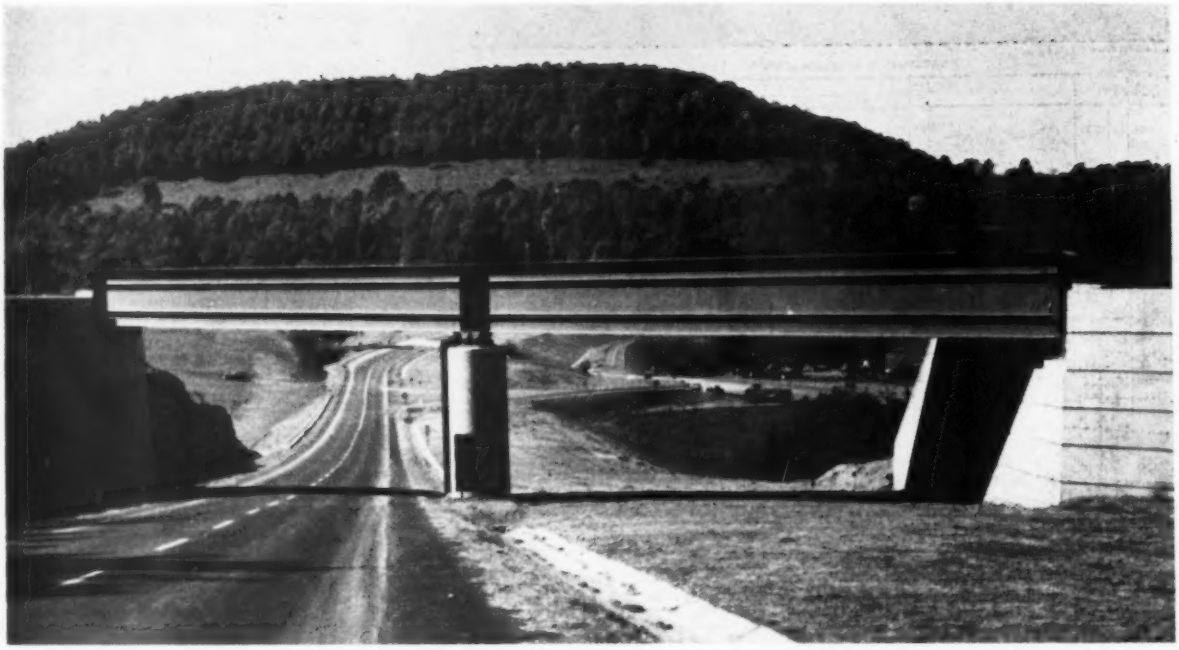
Periodically, a detailed listing is made of all inventory items which have not shown movement for a certain period of time. This listing is then used for purposes of either selling or scrapping the inventory if it is obsolete, unusable or surplus.

We are currently developing a maximum-minimum system which will show shortages or excesses in authorized stock. This can be done merely by establishing minimums and maximums for the desired items at the desired locations, and sorting or matching these minimums and maximums against the quantities on hand at the end of a given period.

Not a daily balance

As mentioned above, the inventory reports are issued approximately 10 days to two weeks after the close of a particular accounting period. Accordingly, day-to-day inventory balances are not available for the purchasing and stores department. We have found for track material that this is not important. But, for diesel locomotive parts it has presented a problem and several records must be maintained on fast-moving parts. Under our procedure it does not appear to be practical to try to develop a day-to-day control. It would appear that this could only be performed by using a high-speed computer, and the additional cost does not appear to justify such an expenditure at this time.

"We are currently developing a maximum-minimum system which will show shortages or excesses in authorized stock. This can be done merely by establishing minimums and maximums for the desired items at the desired locations, and sorting or matching these minimums and maximums against the quantities on hand at the end of a given period."



ALL-WELDED bridge carrying D&H across Cherry Valley Turnpike in New York has two 80-ft spans and was designed for E-60 loading. *(Photo courtesy Dept. Public Works, New York State)*

The case for all-welded bridges

The oldest all-welded steel bridge now in regular railroad service in this country was built 23 years ago. Only a mere handful of such structures has been constructed since then. Why has this type of construction failed of more general adoption on the railroads? Is it because of disadvantages compared with riveted or bolted construction? Dr. Li doesn't think so. In fact, as outlined in this article, he is convinced that all-welded bridges are not only practicable but are more economical than riveted or bolted structures.

By **Shu-t'ien Li**
Transportation and Structural Engineering Consultant
Mobile, Ala.

● The practicability and economy of all-welded construction for steel railroad bridges should have been recognized for four decades. Such recognition was hindered, however, by overscrupulous conservatism, which is psychological rather than necessary, subjective rather than scientific, inert instead of progressive, and precedent-following instead of pioneering.

Railroad bridges are admittedly subjected to more severe dynamic effects than highway structures. On the other hand, all the rolling effect, direct vertical effect, and locomotive nosing effect can be more easily appraised and provided for than the subtle forces that act upon ships when they drift at the mercy of the heavy blows of high winds and waves.

Yet naval architects have been more daring in the application of all-welded construction in their floating structures than bridge engineers in their stationary structures. Even before the end of World War I an all-welded barge had been put into service in the British Channel which is especially notable for its heavy seas. This unprecedented step established all-welded construction as satisfactory for ship building.

Aeronautical engineers were not behind naval architects in this respect. The first application of welding to aircraft also occurred during World War I. Anthony Fokker, the Dutch plane manufacturer, used it in producing fuselages for some German fighter planes.

Highway bridge engineers were awakened to the advantages of all-welded construction in the early 'Twenties. This awakening included Canada where, in 1923, an all-welded three-span, 500-ft highway bridge was erected in Toronto, Ont. Since then, many all-welded highway bridges have been built. They are commonplace today.

According to a survey conducted by the James F. Lincoln Arc-Welding Foundation in December 1956, at least 35, or 73 per cent, of the states were using all-welded construction, including rolled stringers with welded cover plates. It is estimated that there are now well over 2,000 all-welded highway bridges, including structures having rolled stringers with welded cover plates, in service in the continental United States.

Numerous additional and successful applications of all-welded construction in buildings, storage tanks,

Barriers to acceptance of all-welded construction . . .

. . . and Dr. Li's answers to them

(1) **". . . a well-rooted feeling that the reduced fatigue strength due to welding would result in a structure much inferior to a riveted bridge."**

" . . . tests indicate little difference in fatigue strength between riveting and welding."

(2) **" . . . lack of recognized specifications for weldable structural steel for bridges."**

Now overcome by ASTM Tentative Specification for Structural Steel for Welding—A373-56T.

(3) **Need for a more satisfactory specification for welded bridges.**

Overcome by revision, in 1956, of the American Welding Society's Specification for Welded Highway and Railway Bridges.

(4) **". . . lack of demonstration that welded railroad bridges would save money."**

". . . convincing examples have become available of the economy of all-welded construction."

(5) **". . . the notion that in welded construction . . . the quality of welded joints is doubtful and failure may occur."**

"The skeptics will eventually be convinced."

pipelines and machinery could be cited. However, the examples mentioned above are sufficient to establish the practicability of all-welded construction in railway bridges.

Facts about fatigue strength

Yet there is a well-rooted feeling that the reduced fatigue strength due to welding would result in a structure much inferior to a riveted bridge. This feeling has persistently occupied the minds of many railroad bridge engineers as the first barrier to the use of all-welded construction. While the effect of fatigue it to be recognized, it has been over-exaggerated by a psychological reaction among some engineers. This reaction prevails in spite of classifical tests conducted by Professor W. M. Wilson and his colleagues at the University of Illinois and by investigators elsewhere. These tests indicate little difference in fatigue strength between riveting and welding.

The fatigue strength of welded members was discussed by Professor W. H. Munse of the University of Illinois before a welding conference held in 1957 by the U. S. Engineer Research and Development Laboratories at Fort Belvoir, Va. He gave a summary of fatigue strength for welded beams and girders estimated by means of a modified Goodman diagram from results of laboratory tests conducted at 2,000,000 cycles of zero to maximum tension. His summary indicated that, even under the worst conditions, fatigue strength would be 25 per cent higher than the design stress, indicating no fatigue failure could occur. Professor Munse further showed that, for beams with partial-length cover plates, fatigue strength for both welded highway and railway bridges would be much lower than the design stress. He pointed out, however, that cover plates can be cut off beyond sections having these limiting fatigue strengths so as to maintain the factor of safety at the ends of a partial-length cover plate equal to that of the basic welded member.

"However," remarked Professor Munse, "some practicing engineers who have attempted to make their own evaluation of the laboratory data do not have the background nor the information available to understand fully the significance of the studies. This lack of complete comprehension has sometimes caused the prohibition of welding in instances where, with proper application, it would provide sound, efficient and economical structures."

Service performance, too, has demonstrated the dependability of arc-welding under repeated loads. This was brought out in another paper presented at the same conference by J. E. South, assistant chief engineer—structures, Pennsylvania. He indicated that, in a number of hip verticles that had developed cracks, the failures were repaired by welding and periodic inspections have revealed no further trouble.

Specifications another barrier

Until 1956, the second barrier had been lack of recognized specifications for weldable structural steel for bridges. In that year Committee A-1 on Steel of the American Society for Testing Materials revised the Tentative Specification for Structural Steel for Welding, designated A373-56T. As compared with steel for bridges (ASTM A7), the structural steel for welding shall be made by either the basic open-hearth process or the electric furnace process, or both. This implies that it shall not be made by the acid open-hearth process or the acid-Bessemer process. The revised specification further imposed more restrictive limits on carbon, and limits on manganese and silicon. It also assures fully killed steel in thicknesses over one inch.

In physical properties, structural steel for welding is permitted a wider range of tensile strength for plates, shapes and bars. The range is from 58,000 psi to 75,000 psi. This compares with a permitted range of only 60,000 psi to 72,000 psi for all A7 material 1½ in or less in thickness. The required minimum yield point for structural steel for welding is 32,000 psi versus 33,000 psi for A7 steel.

The year 1956 was also significant in seeing the removal of the third barrier by the adoption of a more satisfactory specification for welded bridges. In that year the American Welding Society completed revision of its Specification for Welded Highway and Railroad Bridges. To satisfy railroad bridge engineers this specification makes mandatory the use of structural steel for welding conforming to the requirements of ASTM A373-56T. It also provides an extensive table of permissible unit stresses for the design of members and welds that are subjected to repeated loads, based on an estimated number of maximum loadings. Another requirement is that the area of each welded member and connection is to be

The case for all-welded bridges . . .

based on the expected maximum and minimum stresses. The revised specification also incorporates requirements for best workmanship and contains definite stipulations for pre-heat and interpass temperatures for various plate thicknesses and electrode classes.

Do they save money?

The fourth barrier has existed in the lack of demonstration that welded railroad bridges would save money. This score could have been settled four decades ago by providing both riveted and welded designs and calling for competitive and alternative bids. Meanwhile, convincing examples have become available of the economy of all-welded construction.

The first all-welded steel railway bridge in the United States was built by the Florida East Coast* in 1935 at Jupiter, Fla. It is a double-track bascule span fabricated by electric welding. The economical advantage attained such proportions that a weight reduction of 42½ tons was effected in the 60-ft span and 100-ton counterweights. It has safely carried main-line traffic for 23 years, being crossed daily by the Miamian, a crack train running between New York and Miami.

German engineers are notable for their economical design and construction and the sturdy character of their structures. Had it not been for the economies and other advantages of all-welded over riveted or bolted construction, they would not have built more than 200 all-welded structures before 1950. Furthermore, they would not have applied all-welded construction to some of their railroad bridges of the plate-girder type before that time. The welded bridge over the Rhine at Cologne, West Germany, with three-span continuous box girders of 404 ft, 605 ft and 407 ft, may even be ranked in the long-span category. A notable example in Switzerland is the Tannwald Bridge, a deck-girder railway structure with three continuous spans of 117 ft each.

An all-welded bridge was constructed in 1953 by the Pennsylvania to carry its main line over Mulberry street in Baltimore, Md. This is a ballasted-deck structure in which the stringers consist of 18-in by 2-in flange plates welded to 36-in by 5⅝-in web plates. I-beam diaphragms are welded to the webs of the stringers, and wrought iron plates are welded to the top flange plates to form a watertight deck to carry the ballast.

In the May 1955 issue of *Railway Track & Structures* a comparison was made between the cost of welded and riveted designs for the Mulberry Street bridge. This comparison indicated that the use of welded stringers would result in a 17 per cent saving in the weight of steel. The article also brought out that the welded stringers had the distinct advantage of offering a smooth top flange for the support of the wrought-iron deck plates without the need for countersunk rivets. The pound price was about the same for both types.

Pioneering in New York State

The Department of Public Works of New York state has built some 800 all-welded highway bridges during the past 15 years through the pioneering efforts of E. W. Wendell, its former deputy chief engineer. Before he retired in 1954 Mr. Wendell persuaded the Delaware & Hudson to accept a design for an all-welded bridge to carry a single-track branch line over a four-lane divided highway. This is a through-girder structure consisting of two 80-ft spans and is designed for Cooper's E-60 loading.

This bridge was designed in accordance with AREA and AWS specifications altered in certain particulars to accord with the state's special specifications developed from its experience with welded highway bridges. A 7-ft 5-in depth was used for the girders which were made up of an 84-in by ⅜-in web plate and 20-in-wide flange plates varying in thickness from 1½ to 2½ in.

The weight of this all-welded bridge is 265,000 lb, whereas an all-riveted design would have weighed 305,000 lb. This 15 per cent saving in steel also represented a 15 per cent saving in money, since the contractor's unit price for the steel was the same for both riveted and welded designs. In addition to the saving, the welded bridge is so pleasing in appearance that no similar riveted bridge can approach it.

The latest clear-cut act to demonstrate that the all-welded railroad bridge really saves considerable money over riveted construction occurred last year. In the same paper mentioned previously, Mr. Smith described the experience with two alternative designs, one riveted and one welded, for a 65-ft deck plate girder bridge designed for E-72 loading. He noted that the weight of the structural steel was 92,000 lb for the riveted structure and 74,500 lb for the welded bridge. Thus the riveted design was 23½ per cent heavier than the all-welded. When bids were taken on both designs, the low bid on the riveted bridge was one-third higher than the low bid on the welded bridge. Of six companies that bid on both, all

(Photo courtesy Lincoln Electric C

In France

Most all-welded railroad bridges are of the girder or beam type. This through-truss bridge in Fra is an exception. Built on a skew, it has pony trusses and a concrete deck.

In Sw

This is an ture, the

* Chief Engineer L. C. Frohman of the Florida East Coast reports that an earlier all-welded deck-girder span was installed on the road's Key West Extension which is now abandoned. He also reports that the approaches to a drawspan over the St. Lucie river at Stuart, Fla., are all-welded and were installed in 1938. In addition, the road has an all-welded double-track steel structure 250 ft long that carries its main line across the San Sebastian river at St. Augustine, Fla. Plans for another double-track bascule span, to be fabricated by arc welding, have been prepared.—Editor.

(Photo courtesy Lincoln Electric Co.)

In Switzerland

This is an all-welded railroad bridge built in Switzerland. Another Swiss structure, the Tannwald bridge, has three continuous spans, each 117 ft long.

(Photo courtesy Florida East Coast)

In the United States

Built in 1935, this all-welded double-track bascule span on the Florida East Coast has a span of 54 ft between bearings.

but one bid less for the welded bridge.

In spite of convincing proof to the contrary, there still remains a fifth barrier in the minds of skeptical bridge engineers. This barrier is the notion that in welded construction, unless there is very rigid inspection and excellent workmanship, the quality of welded joints is doubtful and failure may occur.

The skeptics will eventually be convinced. One thing that will convince them is to recognize that the best contemporary practice requirements for workmanship have been incorporated in the AWS specifications. Another is that standard rules for the qualification of a welding procedure and for qualifying operators have long been well established and followed. A third is that steel fabricators have already developed dependable techniques and applied them repeatedly to the successful fabrication of many highway and some railway bridges. They will also realize that radiographic tests are effective in, and magnetic testing is also available as a convenient means for, detecting internal defects such as seams, blowholes, slag inclusions and cracks.

Radiographic tests, however, need not be applied to all welded joints for their full lengths. It is here that the applied mathematical technique of statistical quality control finds its place. Judging from the probable defects involved, it is safe to say that, wherever circumstances dictate, the application of radiographic tests to 20 per cent of the joints for all-welded steel railroad bridges is conservative practice.

The technique of stress relieving is available and is often required for piping and pressure vessels. However, its application is in general hardly necessary in the case of highway and railway bridges, especially when electrodes with coverings low in hydrogen are used for all structural welding.

What about stress raisers?

In riveted or bolted construction there are many conditions, such as any sudden variation in the thickness of a built-up member, which produce potential stress raisers that could contribute to fatigue failures. In all-welded construction, on the other hand, such conditions are greatly reduced.

Furthermore, in all-welded construction it is possible to avoid unnecessary stress raisers. Bottom lateral plates can be kept up from the flange by welding to the web plate. Intermediate stiffeners can be stopped short of the bottom flange. The elimination of rivet or bolt holes makes the transmission of stress homogeneous and the entire cross section fully effective. Continuous welds render all joints watertight, thus getting rid of a source of corrosion. The trouble of providing clearance for rivet or bolt heads, for riveting or bolting tools, and for countersinking or flattening rivet heads is entirely eliminated.

All-welded construction has all the advantages of lighter weight, less substructure supporting requirements, easier functional design, better aesthetic appearance, and quicker erection.

The facts cited in this article demonstrate that all-welded construction is entirely practicable and generally more economical for steel railroad bridges, and that it does have inherent advantages over riveted construction. All disadvantages that have been psychologically attributed to welded construction are emphatically dispelled either by bona fide realities or by available means of avoiding them. Its advantages by far outweigh any conceivable disadvantages.

In view of what has been said above, it is now the time to recognize these points:

- That the practicability and economy of all-welded construction are well established.
- That prestressed concrete has been demonstrated by competitive and alternative bids on certain highway bridge projects to be more economical than all-welded steel construction.
- That the theme of today is (1) to design and construct all-welded steel bridges in accordance with the latest specifications as far as the advantages of welding will allow; and (2) where speed of erection is a determining factor, to have all-welded shop connections and use high-tensile bolts for the field connections.
- That prestressed all-welded steel construction will be necessary in the future to keep short-span steel construction competitive with pre-stressed concrete.

The prestressing of all-welded steel structures is entirely feasible, will be developed in the future, and should not be regarded as a mere dream.

Now it's brighter, lighter in this big

Structure at Chicago gets aluminum paint, fluorescent lighting, trans

● Modernization of the North Western's passenger station at Chicago is a process that has been going on for several years.

The 80,000-odd commuter passengers who pass through this station each weekday have long since become accustomed to some of the earlier aspects of the improvement program. These include a new air-conditioned ticket office, baggage room and telephone center, the installation of moving stairways, and the cleaning of the high domed ceiling of the main waiting room.

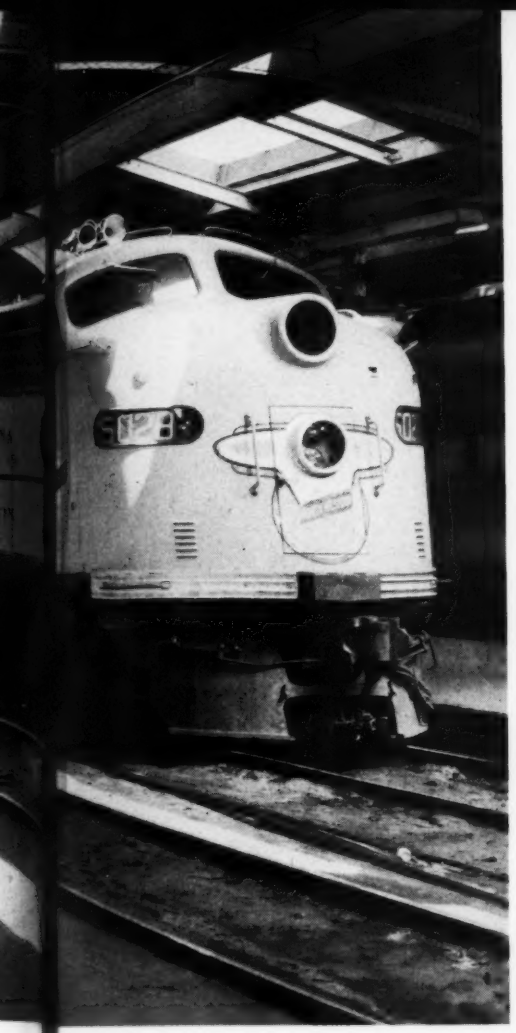
With these improvements accomplished the railroad shifted its attention to the station's 16-track stub-end train shed. This is a Bush type structure, consisting of a steel and concrete roof carried by a series of arched girders spanning each pair of tracks. The girders are supported by a line of steel columns along the center of each platform. Over the center of each track there is a continuous slot for exhausting fumes from locomotives. For natural lighting the roof of the shed contained about 400 skylights. These consisted of 5-ft by 12-ft openings covered with wire glass which had become stained and badly cracked.

Objective of the work in the train-shed was to give it a cleaner, brighter appearance. Three major steps were taken:

- Painting of the train-shed interior with aluminum paint.
- Replacement of the skylights with a corrugated translucent material.
- The installation of fluorescent lighting.

When the railroad undertook the painting phase of this problem it ran into something of a problem. There were approximately 300,000 sq ft of area to be coated. The use of hand methods promised to a slow, tedious process. On the other hand the spraying on of the aluminum paint, using conventional equipment, was felt to have objectionable features too. Spray mist, or "float," would, it was reasoned, present a problem because of its effect on passengers and equipment. How this problem was solved is described in the box at the right.

Preparatory to installing the translucent panels a frame of 2-in by 10-in treated wood was placed in each



his big train shed

ating translucent skylights

of the skylight holes. Before installation these timbers were cut to match the corrugations of the translucent panels. Thus, a positive water seal was effected.

Approximately 290 aluminum cold-cathode fluorescent lighting fixtures were installed in the train shed. Each of these fixtures has two 100-watt milliamp tubes. With the new fixtures the illumination in the shed has been increased from 2 to 10 foot-candles, according to B. D. Allison, the road's electrical engineer for fixed properties. The application of aluminum paint has undoubtedly contributed to the improvement in illumination. However, as pointed out by Mr. Allison, the amount of this contribution is difficult to measure accurately.

How the spray-painting problem was solved

"We had sprayed aluminum paint on several jobs but we always had trouble with 'float,' " said Orville Olson, the North Western's bridge & building supervisor at Chicago. "But there just didn't seem to be any other way to get the train-shed job done, so we went ahead with the high-pressure spray equipment at the Chicago station. Of course, we took precautions such as cleaning on windy days and spraying on calm days, but even this procedure was unsatisfactory."

To help solve the problem the railroad sought the cooperation of the Binks Manufacturing Company, manufacturer of spray painting equipment. The answer was found in a new combination of existing equipment. A material pressure regulator was used in conjunction with a standard material-handling pump and air-pressure regulator. By controlling the pressure of both the air and the paint it was possible to use an internal mix nozzle (paint and air mixed before leaving the gun) on the spray gun. This type nozzle, combined with low, evenly regulated material and air pressure, is reported to result in an even covering spray with minimum paint travel.

The entire set-up—pump, material regulator, agitator, air regulator and necessary valves and connections—was mounted on a cover designed to fit the top of a 30-gal drum. It can also be adapted to a 55-gal drum. All this equipment, along with hoses and spray guns, was carried on a dolly for portability. Air for the spray guns, pump and paint agitator was provided by a LeRoi Tractair.

"By using the low-pressure spray equipment, the rest of the job—seven platforms—took a little over four months to complete," said Mr. Olson. "Compare that to the estimated one month it would have taken to do each platform by hand brushing."

PAINTING OPERATIONS, using the low-pressure technique, were carried out without blocking off tracks and without damage to trains or passengers.

Tracks in big yard cut down nearly 5 ft.

The Richmond, Fredericksburg & Potomac is modernizing its Potomac yard at Alexandria, Va. As part of this job it is necessary to reduce the grade of the body tracks from 0.3 per cent to 0.15 per cent. Because of the restrictive conditions prevailing at the yard the only way the grade reduction could be accomplished is by cutting down the subgrade as much as 4½ ft. Using a track cleaner as the key machine, the job is being carried out without serious interference with yard operations.

• The work of modernizing a large classification yard can be relatively easy, or it can be relatively tough. It depends on circumstances.

When the Richmond, Fredericksburg & Potomac started a $5.5-million project to modernize its Potomac yard at Alexandria, Va., it ran into circumstances that put the work in the "tough" category. Among other things it was found necessary to lower the body tracks of the existing yard for much of their length. How this was done by the railroad's own forces with minimum interference with the use of the yard makes an interesting story.

But first let's look at the circumstances.

Many roads, when faced with the problem of providing a modern classification yard, will acquire the necessary additional property to build a new yard on a new site. This is the "easy" way because the ground surface can be shaped to the desired grade, underground facilities installed without conflict with existing lines, and the work done without hindrance to existing classification operations.

If conditions are such as to rule out building the yard on a new site, one of two courses is usually followed. The existing yard is either revamped by holding the hump and raising the tracks to the new grades, or by selecting some point on the existing grade between the present hump and the opposite end of the yard and holding it at the existing elevation. From that point the new grade is established by lowering the tracks at the hump end and raising them at the opposite end. By this method the expensive work of cutting down the ground level to lower the tracks is kept at a minimum.

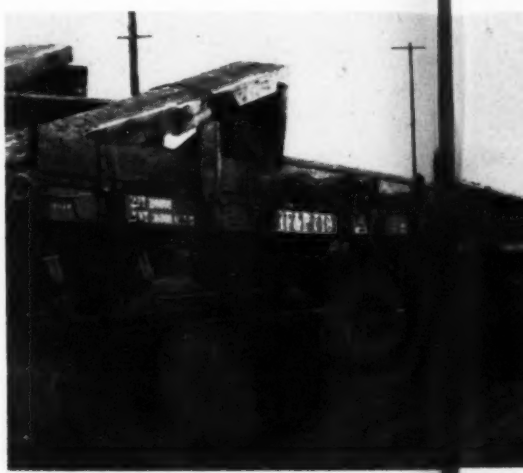
New site not practicable

The RF&P looked into the possibility of building a modern yard on a new site. But even the most practicable location introduced complications. Among other things it would have required the handling of trains of the five connecting roads to a more distant site. Another bad feature, from an operating viewpoint, was that southward trains would have to ascend a 1 per cent grade to leave the yard and would frequently require helper service. These reasons, and other considerations, led to the decision to revamp the southward and northward classification yards at their existing locations. Work now under way is being done in the southward yard.

The hump of the existing southward classification yard had been built to provide a rapid acceleration of cars from the crest. It also has a 0.3-per cent accelerating grade in the classification tracks. Car riders are used to apply and set brakes to free-running cars on all tracks that are clear and to cars containing fragile commodities. Relatively short electro-pneumatic car retarders, manually controlled from three towers, are used to govern the speed of cars, with each car passing through a master, intermediate and group retarder. The 29 existing classification tracks are divided into four groups.

The plan of modernization of the southward yard includes the con-

1. Cutting down, loading

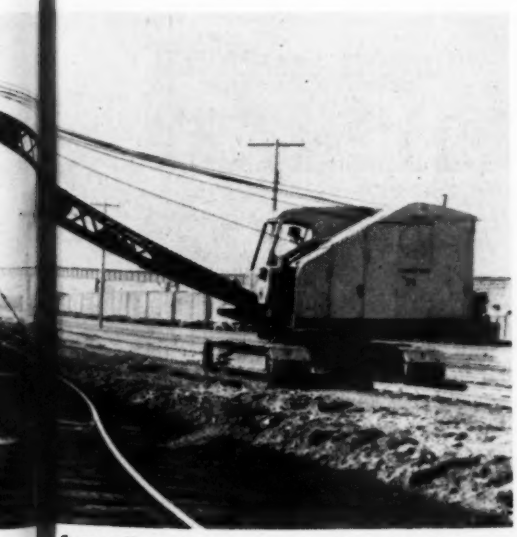


2. Grading new roadbed

3. Shifting the tracks

Loader is digging deep into a windrow of cinders cast up by a motor grader and loads it aboard gondolas.

Roadbed was prepared by a motor grader. Note ramps on cars for loading and unloading the HiLoader.



Crane pulls track away from itself to place it in new location. This was the most satisfactory method used.

struction of 10 additional classification tracks. It also contemplates the installation of automatic switching and automatic retardation. Further, it calls for the removal of the master retarder, the lengthening of the two intermediate retarders which would then serve as master retarders, and the installation below the hump crest of weigh rails so that car weights can be determined and car speeds controlled automatically within the new master retarders.

In addition, the modernization plan contemplates the revision of the grades of the classification tracks to 0.15 per cent so as not to accelerate the speed of free-running cars. The latter are to be stopped at the lower ends of the yard by skates, manually applied.

Run into complications

A complicating factor in carrying out this plan was the existence of facilities at two points, about one-half mile apart, which necessitated holding their present elevations. An overhead electric-traction catenary system exists up the approach to the hump, and on a track leading away from the crest, for the electric motive power of the Pennsylvania. Any change in the crest elevation would entail great expense to alter the catenary system to conform. This indicated a need to hold the hump crest at its present elevation.

The other facility is an overhead railroad bridge carrying the tracks of the Washington & Old Dominion across the yard. This bridge had previously been raised. To raise it higher would entail considerable work and expense. For this reason it was decided to hold the elevation of the existing yard tracks at their present level under the bridge. From this point northward the grade of the tracks would be reduced to one of 0.15 per cent which would be carried to an intersection with the new accelerating grades of the hump.

As a result of this decision, the tracks in the body of the classification yard had to be lowered from a zero cut under the bridge to a 4.5-ft cut at a point 1,700 ft north. From this point, the cut reduced to zero at a point 400 ft farther north.

The first step in this work was the removal of some car-repair facilities on the east side of the yard to make room for the construction of an additional eight-track group. This was made possible by the construction of new car facilities, which consolidated at a new location the existing separate facilities of the northward and southward yards.

The construction of the subgrade for the new eight-track group was started in June 1957. When completed it provided room for the eight tracks and also for an additional track between these and the adjacent existing group. The eight new tracks were then constructed and a new 30-cylinder group retarder was installed. The new track group was placed in service in January 1958.

This step permitted the adjacent track group to be released from service. The easterly track of this group was then disconnected at each end and moved eastward into a space provided for it. The exposed subgrade was then cut down to the new gradient. When this had been completed, the next track westerly was disconnected, moved east into this space and its old subgrade cut down. This procedure continued until all tracks of the group had been lowered and moved.

How subgrade is cut down

Lowering of the subgrade was accomplished with an Athey Track Cleaner HiLoader. At the time that the yard had been previously converted from a hump-gravity to a hump-retarder yard, all the body tracks were raised on engine cinders. Although these were packed down, the cinders proved to be ideal material for the cleaner to excavate. On the first pass the loader deposits enough cinders on the last track shifted for use as ballast when raising that track. A Matisa tamper is then used to consolidate the ballast. On subsequent passes, the track cleaner deposits the cinders into a string of drop-end gondolas hauled in a work train on the nearest undisturbed track. A train load of from 500 to 700 yd is loaded in about 3½ hr.

The Athey machine then climbs aboard one of the cars by means of a ramp, after which the train is hauled to the opposite side of the yard. By dropping the ends of the cars, the track cleaner works through the cars and unloads the material, which is being used for fill for a new

See how cars are unloaded

HI-LOADER is about half way through its unloading cycle. The material will be used as fill for a new track group in the northward yard.

MACHINE is able to pass from car to car, during its unloading operation, by wood platforms which were placed between them.

group of tracks to be constructed on the east side of the northward classification yard. The cars are unloaded by this method in about 1½ hr.

Not all engine cinders

The track cleaner makes as many passes as necessary to lower the subgrade the required amount. Not all the material loaded is engine cinders. On the last few passes the grade gets below that of the original yard and into earth subgrade. This material is loaded in separate cars and disposed of in a convenient location. After the track cleaner is placed aboard the unloading train, a Caterpillar motor grader is used to shape the subgrade of the track just excavated.

Several methods for shifting the tracks were tried before a satisfactory one was adopted. At first several bulldozers were used to push the track over the bank onto the newly prepared roadbed. This was not satisfactory. Next, a method was tried out in which the rails were unspiked and rolled over the embankment, the ties picked up and relaid on the new roadbed, and the rails replaced and respiked. This proved to be too slow. A light crawler crane was then used to lift and pull the track onto its new roadbed where it was lined by hand. This was also too slow.

The method finally adopted is to use a Bucyrus-Erie 22-B crane for this work. The crane works along the higher elevation with its boom extended over the track to be moved and the newly prepared roadbed. The load line of the crane is fastened to the track. When reeved in, the line lifts and shifts the track and places it on the new roadbed. Using this method a track approximately 2100 ft long can be shifted in three hours.

After a track group has been lowered to grade, ballasted and tamped, the Athey machine is again used to pick up the surplus ballast material. The few depressions remaining between tracks are filled by a crane, equipped with a clamshell bucket, working from a car in the work train normally used for hauling the excavated material. After these operations, the yard is clear of all walking obstructions between rails and between tracks.

Lowering turnouts, retarders

While the work of lowering a track group is progressing, the turnouts and group retarder of that group are removed and the grade lowered by bulldozers to the desired grade. The ground surface is also dug out under the new master retarders, and these are temporarily supported at their existing grade on blocking to permit switching operations to continue on adjacent track groups. By using this procedure, the master retarders can be quickly lowered to their final grade whenever the completion of the work on the track groups permits.

The retarders, along with the adjacent tracks and turnouts, are shifted by means of three crawler tractors, a Caterpillar D4 and D8 and an International Harvester TD 18. At their new locations the retarders are placed on a prepared roadbed of stone ballast.

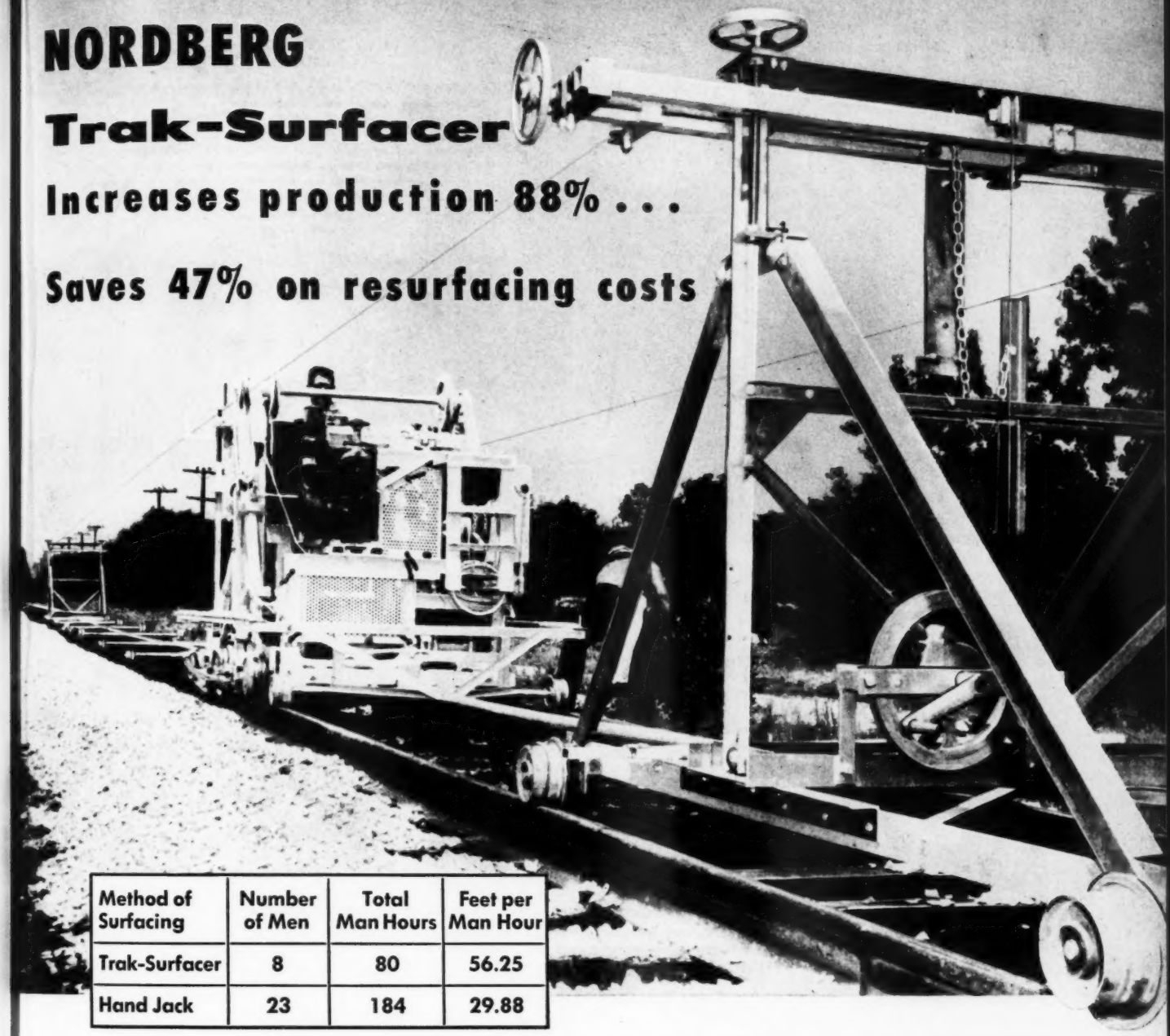
The second track group was restored to service in April, permitting work to start on the third group. It is anticipated that the work of lowering all track groups, and the lighting, automatic switching, retarder controls, signals and communications for the southward yard will be completed in November 1958. Work probably will then commence on the revamping of the northward portion of the yard.

NORDBERG

Trak-Surfacer

Increases production 88% . . .

Saves 47% on resurfacing costs



Method of Surfacing	Number of Men	Total Man Hours	Feet per Man Hour
Trak-Surfacer	8	80	56.25
Hand Jack	23	184	29.88

The above comparison of actual surfacing jobs was made under similar conditions on two Class 1 railroads. *Based on these figures, production with a Nordberg Trak-Surfacer was 88% greater and 47% less costly than with conventional hand methods.*

The Nordberg *Trak-Surfacer* represents an entirely new approach to the correction of track profile and surface. Through the use of a stretched steel wire, it forms a reference line for the top of the Grade Rail. The wire is tightly drawn between two 4-wheel carriages, held apart by a series of 2-wheel buggies and the Nordberg *Tamping Power Jack* which is used as the central unit in the *Trak-Surfacer-Power Jack team*. It raises the track, tamps the tie to hold the raise and provides propulsion power for itself and the entire *Trak-Surfacer*.

Indeed, the *Trak-Surfacer* can demonstrate for you its ability to increase production per man hour and effect appreciable savings when compared to the hand jack method.

For full details about this new Nordberg "Mechanical Muscle", send for a copy of the new *Trak-Surfacer* bulletin 283.

NORDBERG MFG. CO., Milwaukee 1, Wisconsin

NORDBERG

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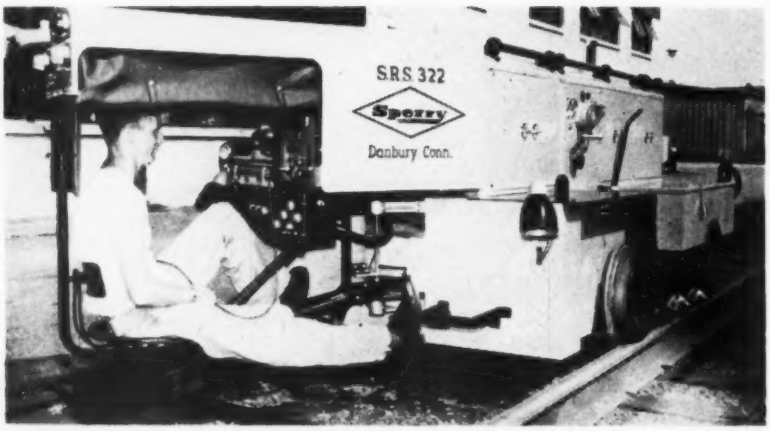
R458

Mechanical Muscles

GATEWAY YARD is the name of the Pittsburgh & Lake Erie's new electronic classification yard (left) at Youngstown, Ohio. The hump and the tower, housing the general yard office, are in the lower lefthand corner of aerial view. Car repair shed is in foreground. The facility has 35 classification tracks and occupies 210 acres. Cars moving down lead track to master retarder pass over 200-ton electronic scale. Cars approaching hump pass two-level inspection point (below).

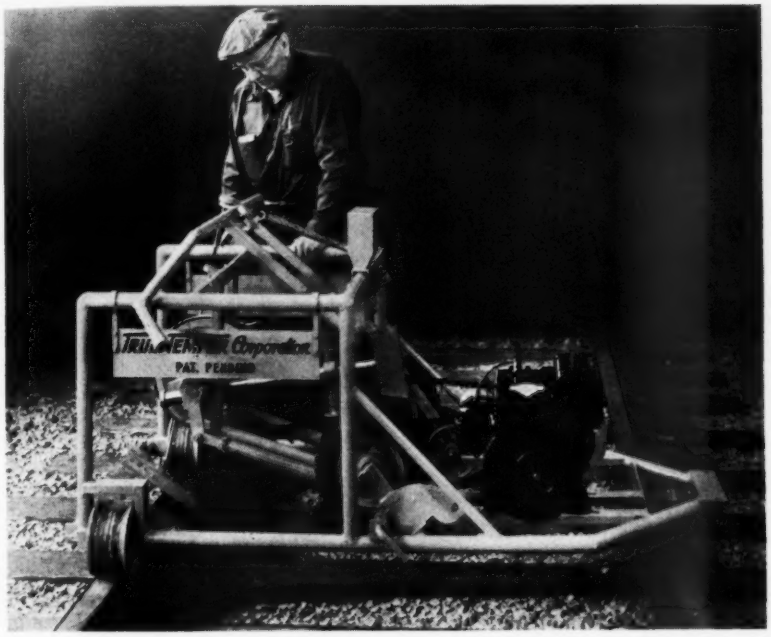


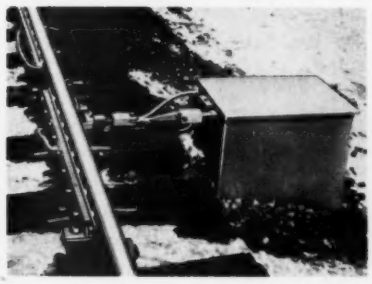
RAIL TESTING in subways is facilitated by this Sperry Ultrasonic detector car specially designed for such use. Because of steep grades—some running to 8 per cent—it was necessary to install a special braking system. Other features include hydraulic controls and lights. The car is driven by a Kohler electric plant which also supplies power for the detector equipment. Car is heavier and longer than standard model.

News briefs in pictures

FREIGHTHOUSE at the new Hills Park yard of the Louisville & Nashville at Atlanta, Ga., has more than 76,000 sq ft of floor space under roof. Main building is a 138-ft by 500-ft Armco truss-type steel structure covered with Armco Aluminized steel. Adjacent is a 60-ft by 100-ft truss-type steel office building. Features include centralized checking system.

Products





Greater efficiency with . . .

New rail lubricator

TYPE MC is the designation given to a new type of rail-and-flange lubricator. The latest model is said to greatly increase the efficiency of lubrication because of increased usable lubricant capacity, two independent pumps, enlarged orifices on the wiping bars, fewer moving parts, and easier adjustments. Other advantages cited by the manufacturer are reduction of regaging and realining costs, elimination of wheel screeching on curves, fewer derailment hazards, higher allowable tonnage ratings and train speeds, and less fuel consumption. Write: *Maintenance Equipment Company, Dept. RTS, Railway Exchange Bldg., Chicago 4, Ill.*

Hammer action . . .

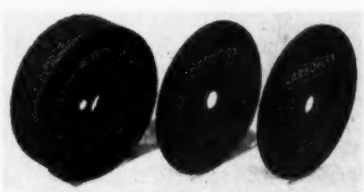
Rail anchor driver

A MECHANICAL rail anchor driver, weighing only 425 lb, has recently been made available. Essentially a mechanized sledge hammer, the new machine has a positioner for holding the anchor firmly against the tie while the mechanical hammer applies the anchor to the rail. It has a special stop to prevent overdriving. The unit is operated by one man and is said to be a fast, flexible, cost-cutting machine due to its light weight, simplicity and retractable set-off wheels. Write: *True Temper Corporation, Dept. RTS, 1623 Euclid Avenue, Cleveland 15, Ohio.*

No stalling with . . .

Engine throttle booster

ENGINE slow-down and stalling, when used on a hydraulic earth borer, can now be prevented through the use of a new engine-throttle booster. According to the manufacturer, this device goes into action when the auger meets greater resistance and requires more power to maintain uniform speed. As more torque is required, the hydraulic pressure in the circuit builds up to a point where a spring-actuated plunger is forced outward to operate a lever which opens the carburetor valve. *J. H. Holan Corporation, Dept. RTS, 4100 West 150th St., Cleveland 11, Ohio.*



Faster production with . . .

Rail-grinding wheels

SIGNIFICANT increases in production per man-hour and in wheel performance are claimed by the manufacturer for three new Carborundum rail-grinding wheels. One is said to practically double the performance of wheels previously used. Each of the wheels is designed for a specific grinding purpose.

One, designated Type G, HA14-0-B5, is for grinding off excess weld metal applied to the surface of the rail. It is an 8-in by 2-in grinding wheel having a steel back. Its maximum operating speed is 4,536 rpm.

Another, designated A24-T-BC, is a straight, glass-reinforced resinoid wheel used for removing excess or flowed metal in the expansion area. It is available in 8-in by ⅛-in, or 5/32-in, or ⅝-in, or 1-in sizes. It is said to be well adapted for joint slotting even when no building up of the rail ends is required. Maximum operating speed is reported to be 6,000 rpm.

The third, designated Type No. 1, is also a glass-reinforced resinoid wheel and is designed particularly for removing rusted and disturbed metal found when repairing engine burns. This wheel is slightly thicker than the slotting wheel but is especially useful for removing metal in narrow places and in odd shapes. Maximum operating speed is 5,729 rpm. *The Carborundum Company, Dept. RTS, Niagara Falls, N.Y.*

RAILWAY TRACK and STRUCTURES

What's the answer?

To be answered in September

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you'd prefer that your name be withheld, we'll gladly comply.

DEADLINE: July 31

1. What machines, if any, can be used to advantage for cleaning out side ditches in narrow rock cuts? Describe how they can be used to best advantage.

2. What factors determine whether a culvert should be installed by tunneling or by open excavation? Explain.

3. Under what conditions are the use of gage rods justified? What factors govern their spacing? Explain.

4. What is the best procedure for making cut-offs on precast reinforced-concrete piles? What equipment will expedite this work?

5. Are the contacts between foremen and the public frequent and important enough to a railroad to justify the cost of conducting a personnel-training course for foremen? Explain.

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

Additional life from crossings

Other than by grinding and building up by welding, what measures can be taken to get additional service life from railroad grade crossings.

Keep surfaced

By V. R. TERRILL
Welding Supervisor
Boston & Maine
Boston, Mass.

Railroad crossings are ordinarily manufactured to one of three general types of construction. These three types of construction are designated as bolted-rail crossings, manganese-steel-insert crossings, and solid manganese-steel crossings.

Since they are used under different service conditions, each is maintained somewhat differently. But all have something in common; their purpose is to carry one track across another at grade.

In general, a railroad crossing requires good line and surface. To maintain line and surface, it is necessary to have good ties and adequate drainage. Given these conditions, it is still necessary to keep the crossing tamped up, in line, and lifted to grade, to help prevent flexure of the assembly. The latter allows variation in the type of stress to which a crossing frog is put and causes the formation of flangeway cracks.

Due to the amount of pounding to which crossing frogs are subjected, some railroads lift their main-line crossings two or three times a year, and spot tamp them occasionally between lifts.

Various things have been tried to prevent or retard the flexure of the assembly. Some time ago, the AREA tested the performance of steel T-beam supports and longitudinal timber supports. It was determined, in general, that the steel supports did not function properly because the castings were not held tightly to the steel substructure. However, the timber supports, while providing a degree of flexibility, were rigid enough to satisfactorily maintain the crossing in alinement. Different types of cemented ballast also were experimented with at that time but no cure-all was found.

We have tried the use of cross rails extending between the obtuse or center frogs with some success. These have helped prevent flexure, particularly in our two and three-rail bolted-rail crossings. With less success, we have also used one-inch steel braces welded on to the tie plate and braced against the easer rails.

It is impossible to set down specific rules to apply to all railroads and all conditions. But, if a crossing can be kept properly lined and surfaced to help check the reversal of stresses, which contribute to the formation of flange cracks, a big step will have been taken towards obtaining additional service life from it.

Reuse it elsewhere

By C. H. JOHNSON
Assistant Engineer
Illinois Central
Chicago, Ill.

Aside from preventive grinding and welding, we use other measures to prolong the service life of railroad crossings.

We design long arms and guard flares, our minimum for heavy-traffic crossings being 5-ft arms with 2-ft guard flares set 2 ft behind the arm ends. In some cases we have used 6-ft arms with 2-ft 6-in flares to allow car trucks to straighten out and prevent them from shimmying through the crossing.

We also give particular attention to the tie layout and to proper plating under the crossing and adjacent to the crossing. This is to get the best possible support at strategic locations, such as the points, the arms and the insulated joints at arm ends.

ffective brush control with "Ammate" in Mississippi. Note cotton and her crops adjoining right-of-way have not been harmed by "Ammate" application. Ammate" is non-volatile . . . can be used on rights-of-way even where they adjoin opland planted to sensitive crops like cotton, tobacco, grapes, tomatoes, soybeans nd peanuts.

For long-term brush control without crop injury use Du Pont AMMATE®

WEED AND BRUSH KILLER

Railroads throughout the country are turning the unique advantages of Du Pont "Ammate" Weed and Brush Killer into maintenance savings. "Ammate" assures long-term brush control, which means lower maintenance costs. When the original spray job is thoroughly done, only subsequent occasional spot sprays are needed to keep brush under control for years.

"Ammate" kills more kinds of brush than any other brush killer. "Ammate" is non-volatile, and because of this feature it can be used on rights-of-way even where they adjoin cropland planted to sensitive crops.

Cut your maintenance costs; rely on Du Pont "Ammate" for long-term brush control.

• *Du Pont "Ammate" Weed and Brush Killer is available in solution (tank-car quantities) or crystalline forms.*

For economical, ong-lasting veed control, use Du Pont TELVAR®

MONURON AND DIURON

veed killers

u Pont "Telvar" weed killers, used separately in combination with sodium chlorate or weed l, provide the base for efficient, economical eed-control programs. Continuing tests conucted by the Association of American Railoads indicate that such herbicidal combinaons offer long-term residual control.

"Telvar" weed killers come as wettable powers, are non-volatile, non-flammable, non-corosive and low in toxicity to humans and livetock. One application of "Telvar" controls eeds for a season or longer . . . saves you hanling and storage space . . . cuts annual mainnance costs. Add effectiveness and economy your weed-control program with Du Pont Telvar" weed killers.

u Pont Technical Service representatives are ailable to discuss your weed- and brush-control probms. Contact the District Office nearest you. E. I. Pont de Nemours & Co. (Inc.), Grasselli Chemicals partment, Wilmington 98, Delaware.

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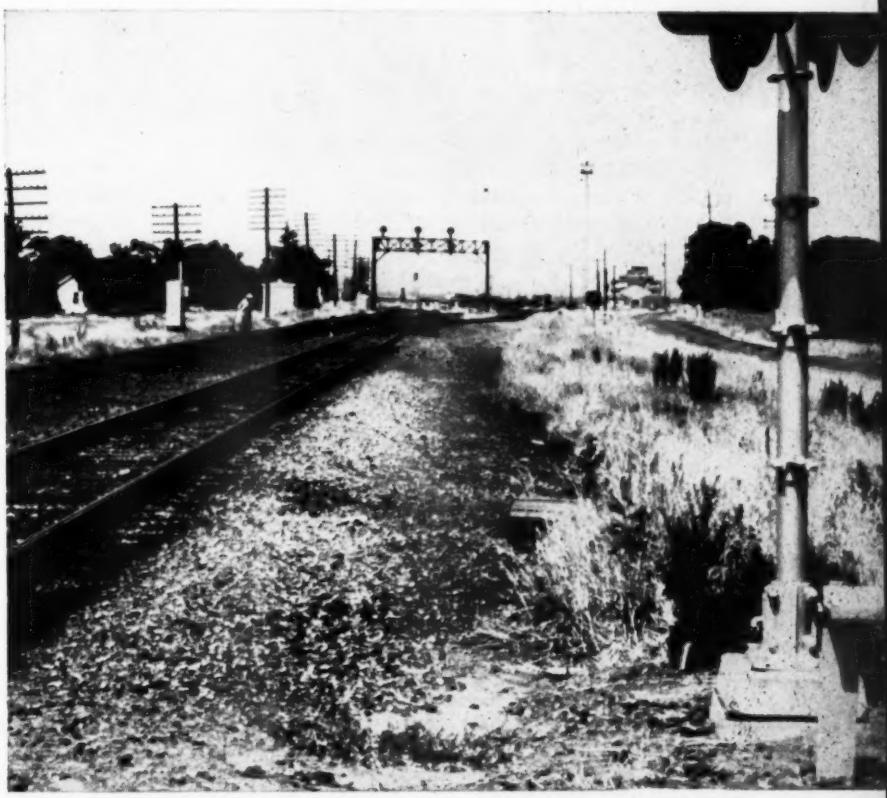


Excellent weed control from "Telvar" W monuron weed killer on the Southern Pacific. The results shown here illustrate the unusual residual properties of "Telvar" weed killers.

On all chemicals, follow label instructions and warnings carefully.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

WEED and BRUSH KILLERS

What's the answer? (cont'd)

A tie-and-plate layout and an installation record is maintained for each crossing. Our new crossings are made up of only three rail sections, i.e., 132-lb, 115-lb and 90-lb.

For some time we have conducted a campaign to standardize or consolidate crossing angles. When crossings come up for renewal, we try to eliminate curved runs wherever possible, and to change the angles slightly. Hence when a crossing is relieved from a heavy main track we can use it for a lighter traffic line or an industry, thereby getting unlimited life with least expense.

With today's changes in traffic on various railroads, we have been using reversible manganese-insert crossings, which permit us to reverse the castings from heavy to light-traffic runs. This practice not only extends the life of the castings but it also permits a reduction to be made in our standby castings from two or more to one. The one casting covers one or more complete crossings of the same angle.

Much has been said already about the maintenance of the subgrade, proper drainage, ballast, timbers, tie pads, anchorage and insulated and conventional joints. Proper consideration of each, of course, is essential to securing additional service life from railroad crossings today.

Keep it tight

By H. L. READ
Supervisor of Track
Illinois Central
Rockford, Ill.

In general, the things that will help the life of a rail crossing can be classified under design, installation and maintenance.

Proper design: This should take into consideration the rail section desired, angle of crossing, tonnage carried, speed, and any specific local condition. Crossing design is being constantly improved by better materials, provision for better support, and improved design on the wearing surfaces, as well as improved strength in linking all parts.

Suppliers can and do deliver a good product that needs only our proper handling thereafter to insure a continuing longer crossing life.

Proper installation: This should provide for adequate drainage and the renewal or installation of subdrains where needed. The ballast at the crossing should be stripped, cleaned or renewed to insure that the drainage will not be clogged by dirt and other fines from the old ballast.

We should make sure that ties, timbers or other support (when used) are in good condition. New material should be used if the old ties are crushing, decayed or split to avoid their renewal very soon under the new crossing.

Under some circumstances tie pads should be applied and these should be cut, as near as possible, to the full size of the bearing area on each tie. Heavy-tonnage lines, where sand or blown-in abrasives cause plate cutting, merit tie-pad consideration.

Actual installation should be done with care to insure having a final job where the line and surface are exact for each run and the ballast, ties, pads, plates and fastenings are functioning properly. Enough rail anchors should be installed promptly to counteract and minimize rail movement.

Proper maintenance: This will include close attention to line and surface for a few weeks just after installation, for the purpose of correcting any settlement or shifting that may occur in the early usage.

The supporting ties should be kept tamped up at all times. Also, the drains should be kept open and the line, level, and gage checked.

Crossing bolts should be tight, and prompt steps taken to prevent too much play between any parts of the crossing. The spikes and bolts should be renewed, as required, and the milled plates, which carry gage and line, also should be built up or renewed.

Maintenance of the approaches also includes good anchorage.

Material count by weight

What practical degree of accuracy can be obtained in loading track materials, such as joint bars, tie plates and rail anchors (both new and secondhand), by weight instead of by number count? Is this method accurate enough when distributing material for out-of-face work? For inventory? Stock piling?

[*No replies were received to this question, which was originated by Mr. Jerman. He has written us further to explain his ideas and his letter is reproduced with the hope that our readers will give it some thought and send in their comments.*—Editor]

Can you help?

By D. L. JERMAN
Chief Engineer
Pittsburgh & West Virginia
Pittsburgh, Pa.

As you know, I directed this question to your excellent magazine in the hope that others might possibly offer assistance on the use of this equipment.

The use of a dynamometer on the load line of cranes used by steel companies and scrap dealers is quite common. The mechanics of these scales range all the way from load cells, similar to those used on track scales, to spring scales with corresponding accuracy of from 0.1 to 0.5 of 1 per cent of the suspended load.

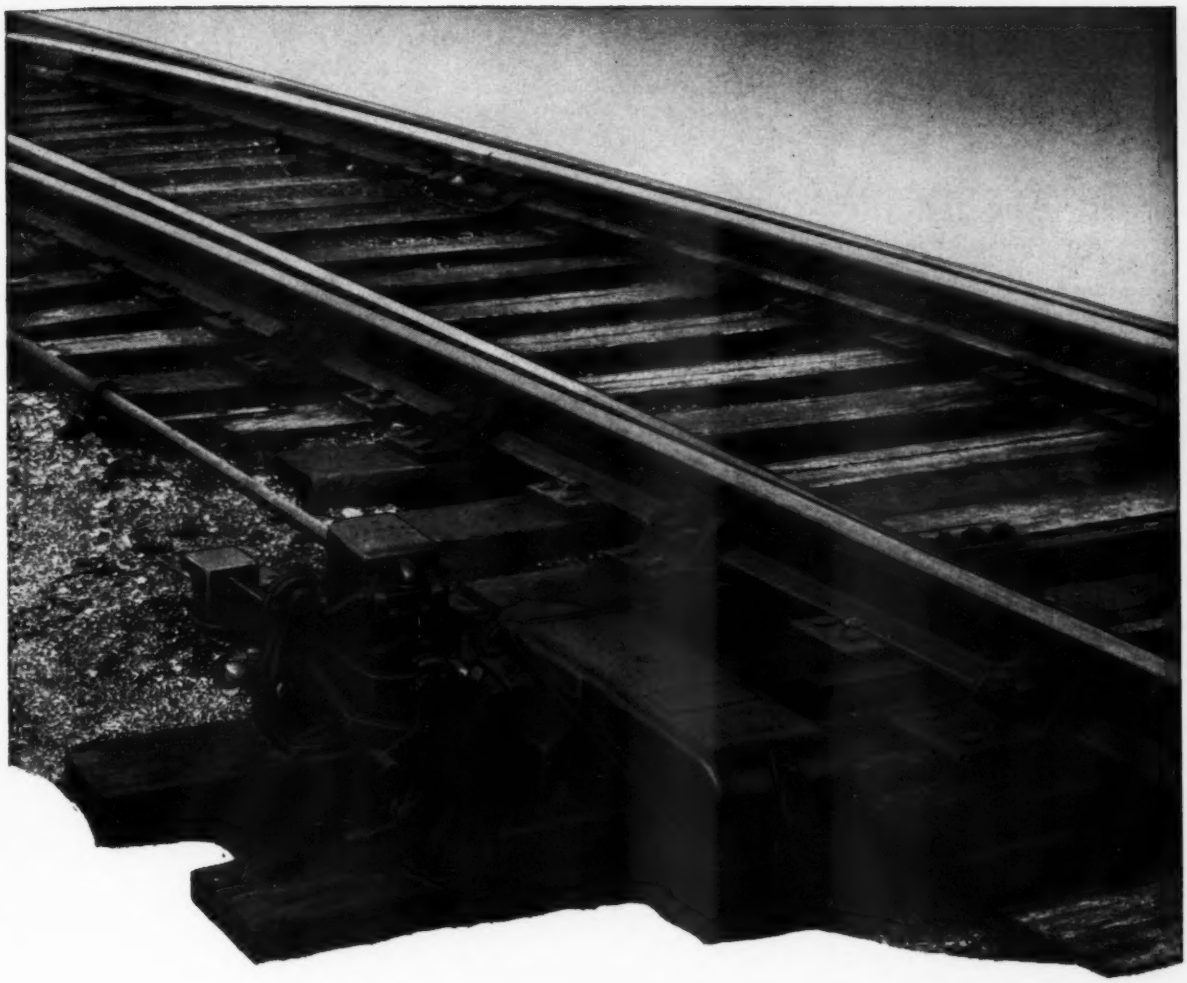
The first facet of this question evokes further questions.

(1) How long can this accuracy be maintained in normal use?

(2) Does a sudden load release effect calibration?

(3) Must special precautions or modifications of present methods of using a magnet on a crane be made?

The second facet of the question involves inventory method and count. Using tie plates as an example, you are familiar with the method of hand counting and stock piling that is typical on most railroad properties. By substitution of a magnet and a crane:



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What's the answer? (cont'd)

(1) Can an inventory be maintained by scale weight only?

(2) What method is used for operations in the yard (i.e., weight from an old pile to a new pile)?

The third phase of this question would be the loading out of material for out-of-face work. Here again, using tie plates as an example:

(1) Can the proper number of plates be loaded by weight from stock inventory for job distribution?

(2) Would the tolerance of one in 200 plates (new scale) cause unnecessary loss or concern with present methods of keeping accounts?

(3) What percentage over the estimated weight should be allowed to preclude the loading of less than the required number for a given job?

After the completion of a job, the scrap can be thrown to the north and the secondhand material to the south, after which the material can be picked up with a magnet and returned to stock in a similar manner.

If it can be worked out, this piece of equipment offers savings in unproductive manpower through easy handling of bulk materials.

Are ear plugs safe?

Is the use of ear plugs beneficial to employees working in noisy surroundings? Or does their use create a greater hazard? Explain.

Greater Hazard

By R. V. DANGREMOND
Roadmaster
Elgin, Joliet & Eastern
Gary, Ind.

There are many areas on our railroad that can very well be classified as noisy, and our M/W employees are required to work in them at frequent intervals.

It has been our opinion that ear plugs would be beneficial to those employees required to work in noisy surroundings. But, due to the great amount of activity in the areas, both from the standpoint of railroad and industry, we believe that the use of ear plugs would create a greater hazard.

Many times during the course of a working day in a noisy area—and due to the railroad-industry activity mentioned above—it is necessary to warn the workmen to move in the clear for safety purposes. Even with the whistles by our foremen, a considerable amount of trouble is had in warning the working personnel. Repeated sharp warnings are required to call their attention to the presence of traffic or other dangerous conditions.

We have had instances of personal injuries that have been traced directly to the inability of the employee to hear warning instructions because of too much ear covering in the winter months.

In the light of the above remarks it is my opinion that, in the interest of safety, ear plugs are not practical for railroad M/W employees' use.

Not authorized

By G. R. KNIGHT
Supt. of Rules & Safety
St. Louis Southwestern
Tyler, Tex.

We do not authorize the use of such protection, nor do we advocate the use of any such devices because of the hazard of personal injury to employees who, of necessity, work about moving equipment.

Since we have not had any experience with ear plugs, I am unable to explain if ear plugs are beneficial or if their use creates a hazard.

Not around track

By C. D. DAVIS
Supervisor of Track
Long Island
Jamaica, N. Y.

The use of ear plugs should be limited to a one-man task, working in a confined area, and to a job where no other hazard exists. These conditions would generally occur at a noisy machine in a shop, and only rarely in the field.

Ear plugs should be prohibited in any area on or about the track or where two or more men work together. A false sense of security is created when hearing is impeded, and will result in a higher injury ratio. The wearer becomes oblivious to his surroundings and depends upon warnings from others to avoid accidents.

Plugs should only be worn on special occasions and each case should be decided upon its needs and merits. A letter of authority should then be issued to the user and all others advised against their use.

For rare instances

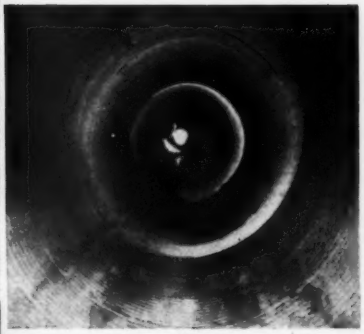
By G. M. DEMPSEY
Assistant Superintendent of Safety
Chicago, Milwaukee, St. Paul & Pacific
Chicago

Pencil erasers, wads of cotton and various types of ear plugs and covers have been used for years in an attempt to shut out noises which in some instances have seemed to be unbearable. However, in track and structures work, this has posed no sizable problem.

It is recognized that in confined areas noises are more intense. Since most track and structure operations are carried on outdoors, this has a tendency to dissipate or attenuate the noise. Furthermore, there are very few operations where the noise is continuous. The greater majority of the work on the track or on structures, such as in riveting and in mechanical spike driving, involves noise concentrations for only short periods. Even in mechanical tamping and in other mechanical operations where the noise is continuous, the density is insufficient to cause any degree of discomfort.

In some industrial plants, the problem is entirely different. This is true also in military installations where jet engines are a part of the over-all operation. There, trained personnel are charged with the responsibility of measuring the intensity of noise in decibels, controlling it by mechanical means to the fullest extent possible and providing personal protective equipment as may be appropriate. In some instances, rubber ear plugs, muffs, ear valves,

Old installations prove durability of Armco Corrugated Metal Structures



Installed by the Union Pacific in Wyoming during 1928, this 60-inch Armco Structure withstands the dead load of 77 feet of fill. Photo above, taken during recent inspection, reveals continuing good alignment.

Armco Structures are designed for both material and structural durability under all conditions. The installations shown here are good reason why America's major roads have installed thousands of Armco Corrugated Metal Structures to assure long, trouble-free service.

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In 1933 the roof of this old stone arch under the Pennsylvania Railroad near Richmond, Indiana, was lined with Armco MULTI-PLATE to provide added structural durability. Recent inspection shows the metal arch to be in excellent condition.

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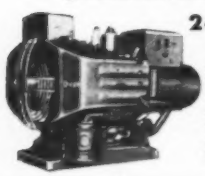

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What's the answer? (cont'd)

waxed cotton plugs or helmets are used, and even helmets combining a device which fits into the ear or over it.

Accordingly, it would seem that there is a place for protective equipment of this kind. When provided under proper supervision, it should not create a greater hazard, depending on the surroundings and circumstances. For railroad track and structures work, it would seem logical to conclude that no over-all program of personal protective equipment is needed, except in very rare instances. In such instances it would be adequate to insert absorbent cotton, loosely packed so as not to block out conversation or noise which should be heard in the interest of safety of the individual.

Long ties at bridge approaches

Are there advantages in installing extra-long crossties at bridge approaches? How long? How many? Does single track and double track make a difference?

Prefers grouting

By E. P. STRAUGHAN
General Roadmaster
Spokane, Portland & Seattle
Portland, Ore.

I do not recommend the use of longer ties at bridge approaches. This would not be the entire answer, even though the extra bearing would be of some help.

My recommendation, based on experience, is to resort to pressure grouting of the subgrade at the approaches. This results in a stabilized subgrade and eliminates any necessity for the use of longer ties.

The cost of pressure grouting would be far under the cost of maintaining the longer ties.

Are of value

By J. HUGHES
B&B Supervisor
Union Pacific
Kansas City, Mo.

I think the installation of long ties at open-deck steel bridge approaches would be of value. We now install tie pads on 10 ties from each end on the approaches to all steel bridges when new ties are installed. But we still have complaints occasionally that bridges ride rough. Many times we find low dumps, or ties in the track at the ends of bridges swinging from ½ to ¾ in. This sometimes results in bridges getting out of line and surface.

I believe that the installation of ten 9-ft crossties at each end of all steel bridges on heavy-traffic lines would give more bearing surface for the ties and result in the approaches holding up longer. This should not eliminate the necessary maintenance of the track at the bridge approaches. It would, however, not require as much attention as is now necessary.

Reduces maintenance

By D. E. TRACY
B&B Supervisor
Southern Pacific Co.
El Paso, Tex.

Advantages in installing extra-long crossties at bridge approaches are many. We have found that, by placing six ties, 9 ft long, on each bridge approach, we form a better foundation between the loose roadbed and the solid structure. Also, the track department has less trouble and expense in maintaining the surface on these approaches. The extra-long ties reduce the plate cutting of the back-wall ties of a trestle, and these are quite expensive to maintain or renew.

We also have found that 9½-ft ties on a ballasted-deck structure are desirable for providing a better foundation. On all new ballasted-deck trestles we are putting 9-ft ties in place of regular ties. On open-deck structures we have found that, by adding one tie more than is normally placed

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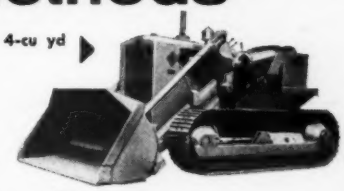
4 Tractor Shovels — 1½ to 4-cu yd standard buckets



3 Motor Scrapers — 9.5, 14 and 20 cu yd (heaped)
2 Motor Wagons — 15-cu yd rock and 24-cu yd bottom dump (heaped)
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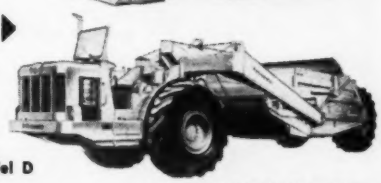
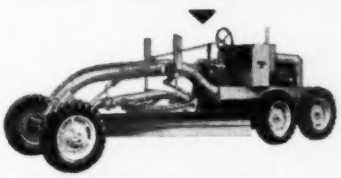


2 Motor Graders — 120-brake hp Model Forty Five and 50-brake hp Model D



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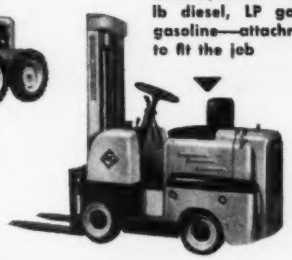
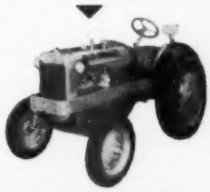


Wheel Tractors with Attachments—22.8 to 45.3 belt hp



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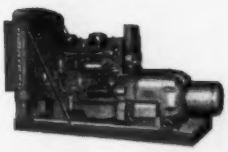


Look ahead . . . *move ahead* . . . and stay ahead with

ALLIS-CHALMERS

What's the answer? (cont'd)

at the bulkhead or abutment, we reduce the maintenance.

The first three ties away from the structure are placed as close together as possible and still leave enough space to tamp them. The other ties are spaced normally. This has reduced the maintenance and complaints of rough track to a minimum.

As for the double-track lines, I believe the 9-ft ties should be used there also. The principal idea of the long tie is to have a better foundation for the high-speed trains that we are running today.

Reduces settlement

By C. L. MOSER
B&B Supervisor
Southern
Asheville, N. C.

It is my opinion that the installation of long crossties at bridge approaches would be advantageous, because the track has a tendency to settle on fills at all bridge approaches. The settlement varies according to the height of fills and the type of fill material. Longer ties would furnish more tie area and reduce the settlement of the track at bridge approaches.

The crossties in single track should be 11 ft long with a minimum of ten 7-in by 9-in by 11-ft track ties at each bridge approach. Single track and double track would not make any difference as long as the tracks were on the same elevation. If the double track is on the same elevation, I would recommend using 24-ft ties under both tracks, with a minimum of 10 ties to each approach. If the two tracks were not on the same elevation, I would suggest using the 11-ft crossties under each track.

Use six 10-ft ties

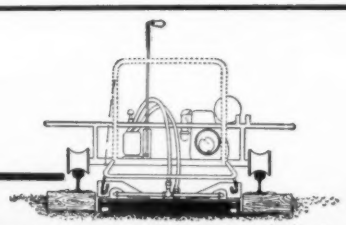
By A. B. WANG
B&B Supervisor
Monon Railroad
Lafayette, Ind.

Even though you have heavy rail and a good stone-ballast section, the approaches to open-deck bridges must be watched and kept tamped. In these days of fewer section men you will find places where some bridges need frequent attention. This is particularly true for branch lines having gravel or cinder ballast. There are many cases where a bridge had been raised, but the embankments at the ends have not been widened or given a proper slope. This results in trying to carry all the load on a raised ballast section. Wherever you allow the approaches at a bridge to sag, you put a severe strain on the line and surface of an open-deck bridge, even the ones having tie pads and hook bolts.

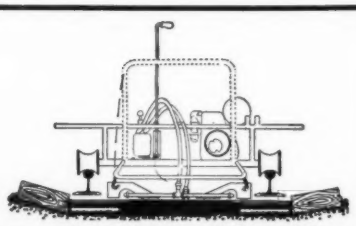
Assuming you have to live with such conditions, the only solution would seem to be to provide for more bearing on the ties at bridge approaches. The approach ties should be at least as long as the bridge ties, that is, 10 ft long. Six on each end of the bridge should be sufficient. Such a length would fit in with most embankment widths at bridge ends without the necessity for building up and extending the back walls or wings.

The same should be done on dou-

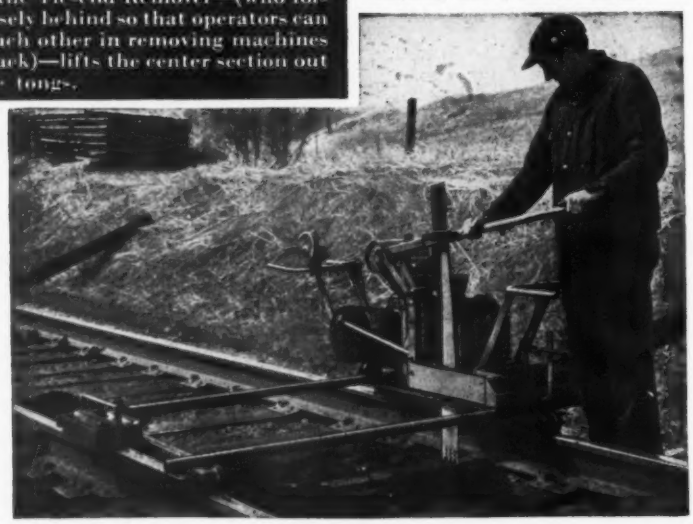
NO MORE TRENCHING!
NO MORE JACKING UP TRACK!
This WOOLERY
TIE-REMOVING TEAM
NOW ELIMINATES SLOW, COSTLY METHOD



A double-ended hydraulic cylinder is then lowered into the tie bed. A simple turn of the valve moves these two pistons outward, *pushing the tie-ends completely clear of the rail—whether working with single or double shoulder tie plates!* The crib is now open—and only the necessary amount of ballast is removed to admit the new tie.



After the tie has been cut on both sides by the WOOLERY Tie Cutter, the operator of the Tie-end Remover—(who follows closely behind so that operators can assist each other in removing machines from track)—lifts the center section out with tie tongs.



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For highest efficiency two Tie Cutters should be used ahead of one Tie End Remover.

The trend toward heavier rail and double shoulder tie plates has made removing tie-ends increasingly difficult. With the WOOLERY Tie-end Remover, this task can now be done *in less than a minute by one man with no more effort than that required to turn a valve!*

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Because 17.2 mph L-W Tournatractor gets out of the way fast, it does not tie up rail traffic while cleaning drainage ditches or landslides, cutting down banks, spreading cinders, ballast, preparing grade crossings, etc. It requires no work train, no train crew, no loading and unloading delays. Operator simply drives out to the job, cleans up the dirt to be moved, goes on to the next assignment immediately.

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Big rubber tires of L-W Tournatractor roll over tracks without damage. You don't have to worry about bent rails, chamfered ties, inoperative switches where this machine is working. Nor do you need planking to drive this tractor over soft, slippery, or shifting materials.

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Besides doing heavy-duty dozing on your right-of-way, Tournatractor can aid other machinery—it tows and operates other wheeled work units, push-loads self-propelled scrapers. If you choose L-W's coupler-equipped model, called SwitchTractor†, for your work, it can also provide off-track emergency car switching service as desired.

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MEMBER

What's the answer? (cont'd)

ble track, even though the direction of traffic might favor one end of a bridge. The location of the bridge, such as being on a tangent, at the ends of curves, or at the bottom of a severe grade, is all the more reason that longer approach ties should be used.

Long ties not the cure

By J. R. RUSHMER
Roadway Engineer
Atchison, Topeka & Santa Fe
Amarillo, Tex.

The use of longer crossties does little to improve soft spots. For example, in territory where 8-ft ties are standard, usually 8-ft 6-in or 9-ft crossties are the only longer ties regularly available. These would reduce pressures on roadbed only 6.25 or 12.5 per cent, respectively. Using both longer crossties and closer tie spacing still would not increase support and reduce roadbed pressures sufficiently to be worth while. Pressure grouting or well-planned pole driving are the only sure and long-lived means of securing stable roadbed. These measures are well developed and easily done. On railways not owning equipment for these purposes, such work can be handled readily by contract.

Uses AREA plan

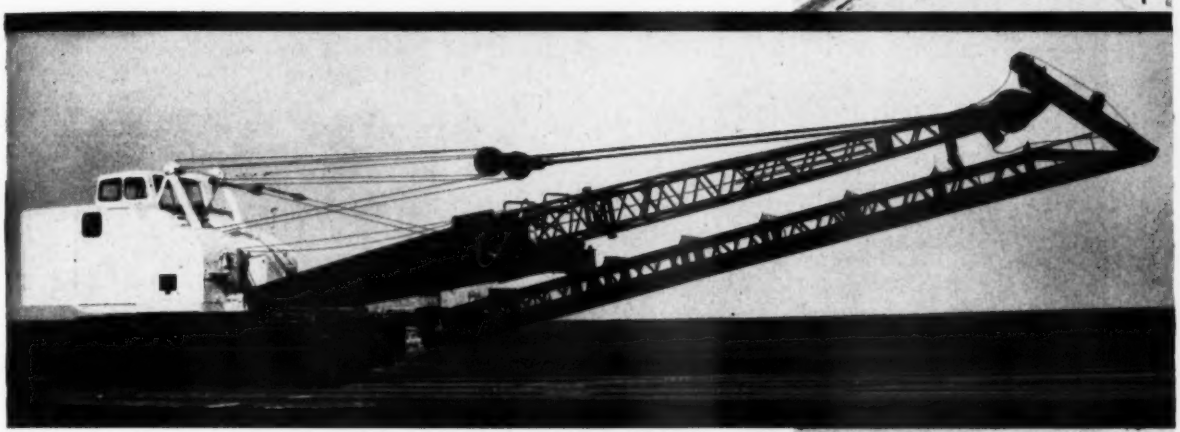
By R. T. BLEWITT
Bridge Engineer
New York, Chicago & St. Louis
Cleveland, Ohio

This question relates to the maintenance required to keep the track at proper surface because of the unusual physical conditions at the bridge which occur between the rigid and elastic supports offered by the abutments and the approaches, respectively.

I believe this subject was freely discussed by the Track committee of the American Railway Engineering Association. In 1952, this committee's recommended practice was adopted by the association. In an en-

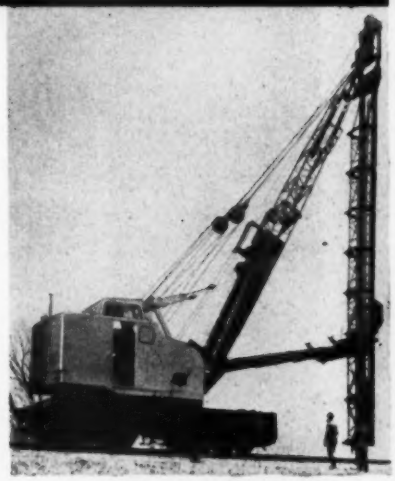
(*Continued on page* 54)

LATEST TYPE BROWNHOIST DIESEL ELECTRIC PILE DRIVER AT WORK FOR AMERICA'S RAILROADS



BROWNHOIST DIESEL ELECTRIC PILE DRIVERS HAVE THE SPEED TO GET OFF MAIN LINES QUICKLY, AND THE LONG LEADERS AND FULL CIRCLE ROTATION TO WORK IN ANY POSITION

Propelled by electric travel motors, these Industrial Brownhoist machines are capable of road speeds up to 18 miles per hour . . . they get on and off main lines in a hurry. Strut and leaders fold away for travel, allowing full railroad clearance, and they're quickly and easily fastened in upright position for battering. The Brownhoist rotates in a full circle, and its leader reach of 28'6" from center of rotation gives it a wide working range. A large Diesel engine supplies the power for the heavy-duty Brownhoist machine. It has a maximum leader load of 26,000 pounds, and is equipped with power battering to sink piles as large or larger than that shown in the upper photograph. For further information about Diesel Electric Pile Drivers or other heavy-duty materials handling equipment, write today for your copy of the new Industrial Brownhoist catalog.



189

BROWNHOIST

BROWNHOIST MATERIALS HANDLING EQUIPMENT GIVES A LIFT TO AMERICAN INDUSTRY

INDUSTRIAL BROWNHOIST CORPORATION
BAY CITY, MICHIGAN · DISTRICT OFFICES: New York, Philadelphia, Cleveland, Chicago, San Francisco, Montreal
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If you want the track to

STAY UP...

TAMP WITH A McWILLIAMS

Track raised and tamped using a McWilliams Multiple Tamper will extend surfacing cycle by 30% or more over other machines now in use.

Trial and LEASE Plans

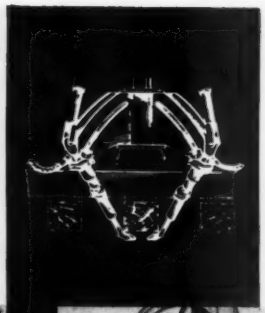
McWilliams Multiple Tamper

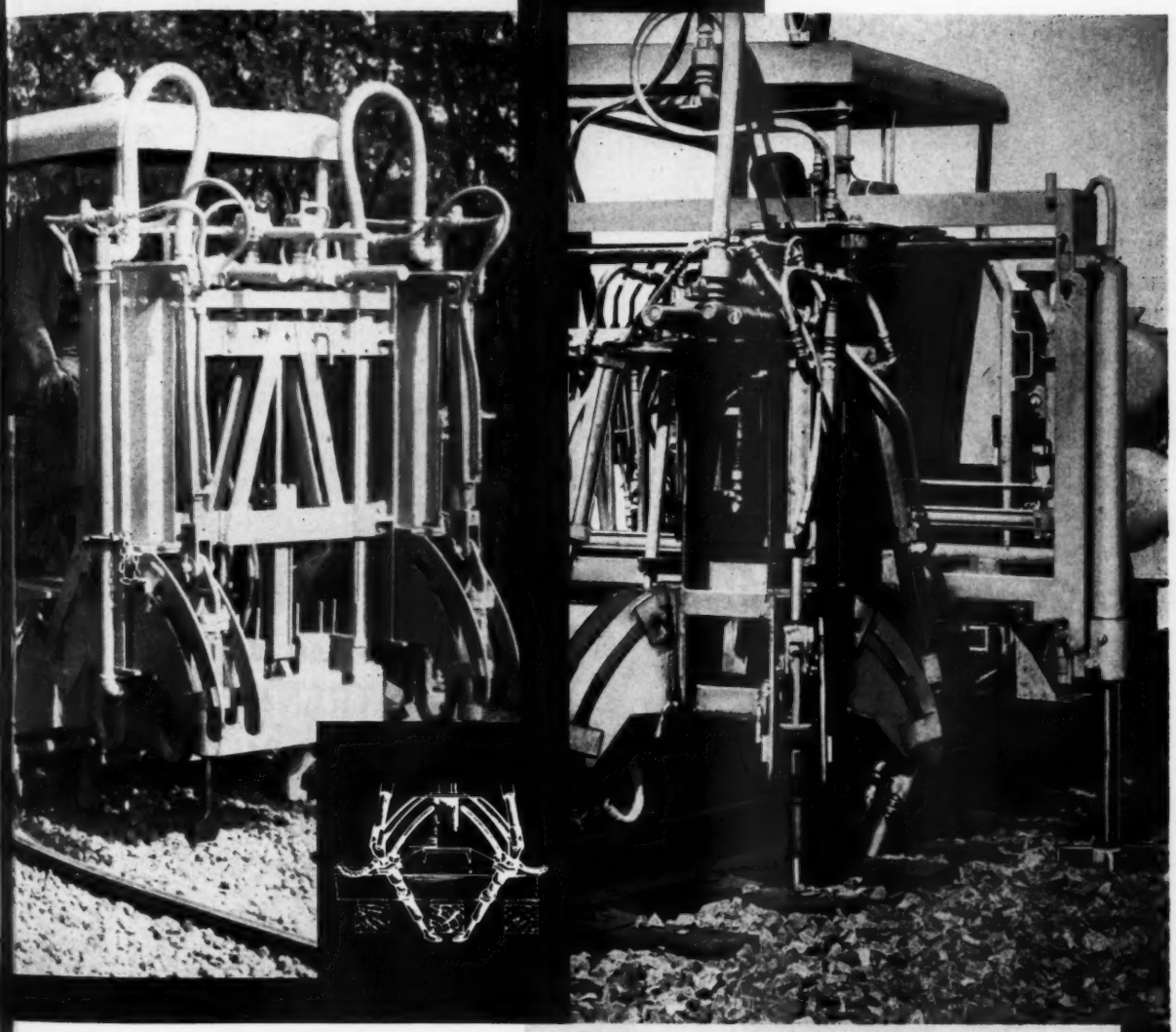
These fundamentals, all pioneered by Railway Maintenance, are the main reasons why track stays up longer when tamped with a McWilliams: effective tamping under the rail-bearing area of the tie . . . split head design . . . tamping *pressure and impact* under control of the operator.

Now Available with Integral Hydraulic Jacks.

McWilliams Jack Tamper

The only machine that will raise and tamp track . . . and which will hold established grade, keeping ahead of one or two production tampers.





McWilliams Spot Tamper

Providing big-tamper ballast compaction, this brings a new level of economy to spot surfacing . . . yard and terminal maintenance . . . and to general tamping on smaller railroads where the cost of production tampers cannot be justified.

Railway Maintenance Corporation

PITTSBURGH 30, PA.

What's the answer? (cont'd)

deavor to afford better distribution of the loads at the approaches, their plan 913-52 recommended the installation of five long ties at regular tie-spacing intervals. This can be done in increments of 6 in. For example, the first tie is to be 11 ft 0 in long and each succeeding tie reduced 6 in. in length so that the fifth tie is 9 ft 0 in long.

We have adopted this method of using the five ties of variable lengths at several locations. We have found in all cases where these ties have been applied that the reduced maintenance costs justify their installation.

Although we have not made applications of this nature on double-track approaches, I see no reason why the same application should not be adopted for each track.

Protecting fresh concrete

What covering materials can be used to protect newly placed concrete and brick masonry in summer? In winter? What are the relative advantages of each?

Tarpaulins and steam

By H. Bober
Bridge & Building Engineer
Gulf, Mobile & Ohio
Mobile, Ala.

Freshly poured concrete or masonry should be protected against mechanical injury, heavy rains or flowing water, excessive heat or freezing, and direct rays of the sun.

Concrete sets slowly when the temperature is below 45 deg. Freezing is injurious to new concrete, and repeated freezing and thawing may ruin it.

Excessive heat will cause fresh concrete to set rapidly, often causing severe shrinkage stresses in the surface, resulting in checks and surface cracking. Rapid loss of water during the setting period should be prevented.

Concrete which has been cured at normal temperatures with sufficient moisture will be stronger and more resistant to weathering than if not properly cured.

In summer, exposed surfaces should be covered as soon as a slight initial set of concrete has been obtained, and kept moist for at least one week.

In winter, heat should be applied around the concrete and forms so that the temperature will not be below 50 deg for one week. In addition to heating, sufficient moisture will also be required.

The type of covering depends on the kind of work and amount of concrete.

Keep Cool, mister! with

ARCTIC BOY
portable water coolers

- Rugged Construction . . . good everywhere men work!
- Galvanized inset, hot dipped *after* forming for flaw-free finish!
- Large top opening, easy to ice, fill and clean.
- Send for complete information and booklet "Care and Use of Your Cooler." Write Dept. C-75.

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THE SCHLUETER MFG. CO. • ST. LOUIS 7, MO.

the improved GAUTIER
the finest in RAIL ANCHORS

Made of Alloy Spring steel, the Improved Gautier is one of the heaviest and most rugged rail anchors on the market.

STRENGTH
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Manufactured exclusively by
MID-WEST FORGING & MANUFACTURING CO.
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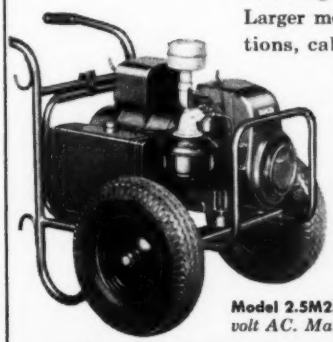
KOHLER ELECTRIC PLANTS

Portable power... compact, reliable

For maintenance of way... also wrecking trains, construction of signal towers and trestles. Larger models for communications, caboose lighting, work trains, tunnels, electro magnets. Sizes 500 watts to 100 KW gasoline, 10 KW to 100 KW diesel. Battery charging models, 6, 12, 32, 110 volts. Write for folder C-18.



Model 2.5M25, *2500 watts, 115 volt AC. Manual start.*

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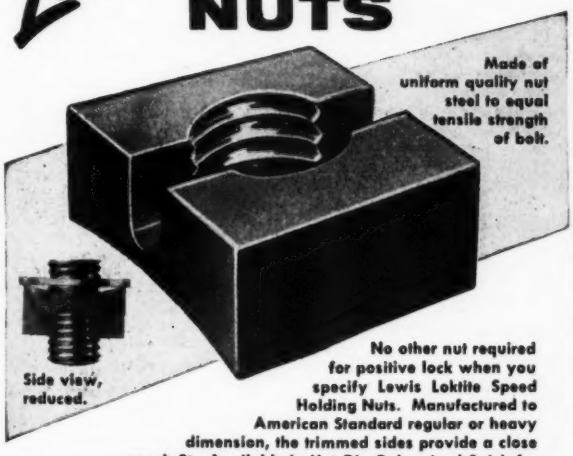
Electric Plants • Air-cooled Engines • Precision Controls

FOR POSITIVE LOCK USE

Lewis LOKTITE NUTS



Made of uniform quality nut steel to equal tensile strength of bolt.

Side view, reduced.

No other nut required for positive lock when you specify Lewis Loktite Speed Holding Nuts. Manufactured to American Standard regular or heavy dimension, the trimmed sides provide a close wrench fit. Available in Hot-Dip Galvanized finish for Double-Life, greater economy, in black for low original cost. Call, wire or write for samples, prices.

All products are manufactured in the U.S.A. to A.S.T.M. specifications.

Lewis BOLT & NUT COMPANY
504 Malcolm Ave. S. E.
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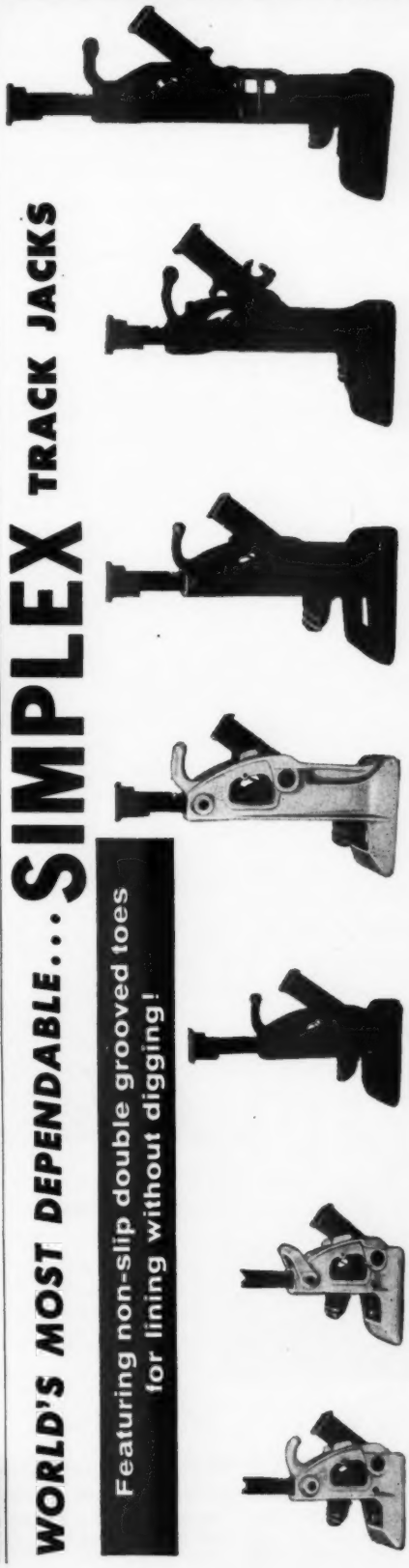
LOOK FOR THIS STAMP OF QUALITY

GET IN THE GROOVE!

WORLD'S MOST DEPENDABLE... SIMPLEX TRACK JACKS

Featuring non-slip double grooved toes for lining without digging!



- Most complete line — twelve models
- Available with malleable or aluminum alloy housings
- Large area (2½" x 3¼") lifting toe has non-slip grooves
- Lifting ranges from 5 inches to 19¼ inches
- Thumb guards and trips on both sides
- Lowest toe height — less digging or pounding to set jack

WORLD'S LARGEST MFGRS. OF INDUSTRIAL MECHANICAL AND HYDRAULIC JACKS

SIMPLEX RE-MO-TROL UTIL-A-TROL JENNY ROL-TROL JACKS

TEMPLETON, KENLY & CO. • 2543 GARDNER RD. • BROADVIEW, ILLINOIS

What's the answer? (cont'd)

For structural work, where wood forms are used, it is best to cover exposed surfaces of concrete in summer with a light membrane, such as burlap, and keep it wet by water dripping from a hose or mechanical sprinklers.

In winter, the best protection is obtained by enclosing the newly poured concrete in heavy tarpaulins, or in a housing made of old form lumber or plywood, and applying live steam from a boiler at low pressure. Thermometers should be placed around the areas so that the temperature can be checked frequently.

The boiler horsepower should be about 2½ times the output of the mixer in cubic yards per hour. For instance, if a one-half yard mixer is used, delivering 20 batches per hour, the boiler should be 25 hp. Usually, sufficient moisture is present in steam curing from condensation, but, if not, additional water should be supplied.

Salamanders have been and still are used extensively for protecting concrete against freezing. They are objectionable because they dry out the air around the concrete, and are a serious fire hazard. If used at all, surface concrete should be sprinkled with water frequently and the installation should be under competent supervision.

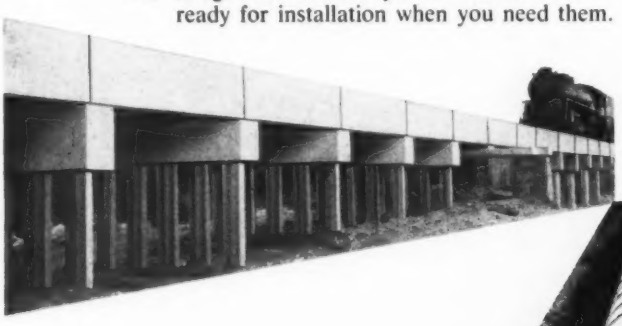
Exposed flat surfaces, like the tops of piers, concrete paving, etc., can be cured in summer by applying a 1-in layer of sand after the initial set, and keeping it thoroughly wet for seven days. For paving work, certain proprietary chemical curing compounds are now widely used. These are sprayed over the surface of the slab and form a moistureproof film which prevents the evaporation of surface moisture.

$ave Money... WITH THESE

PRECAST CONCRETE PRODUCTS

PILING and BRIDGE SLABS

Time is money. Save it by using precast piling and bridge slabs made by American-Marietta—ready for installation when you need them.



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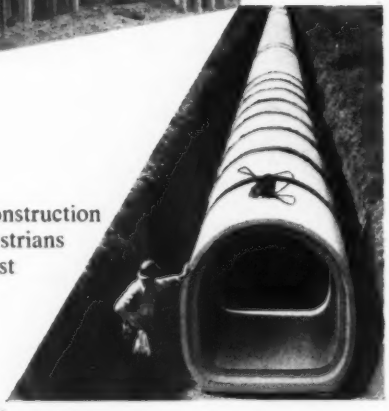
Save up to 30% in the construction of underpasses for pedestrians and animals—with precast Flat-Base Pipe.



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Economy, safety and appearance are three good reasons for specifying A-M open or closed face Cribbing. Also it can be relocated easily.

Write today for illustrated folders full of money-saving ideas.

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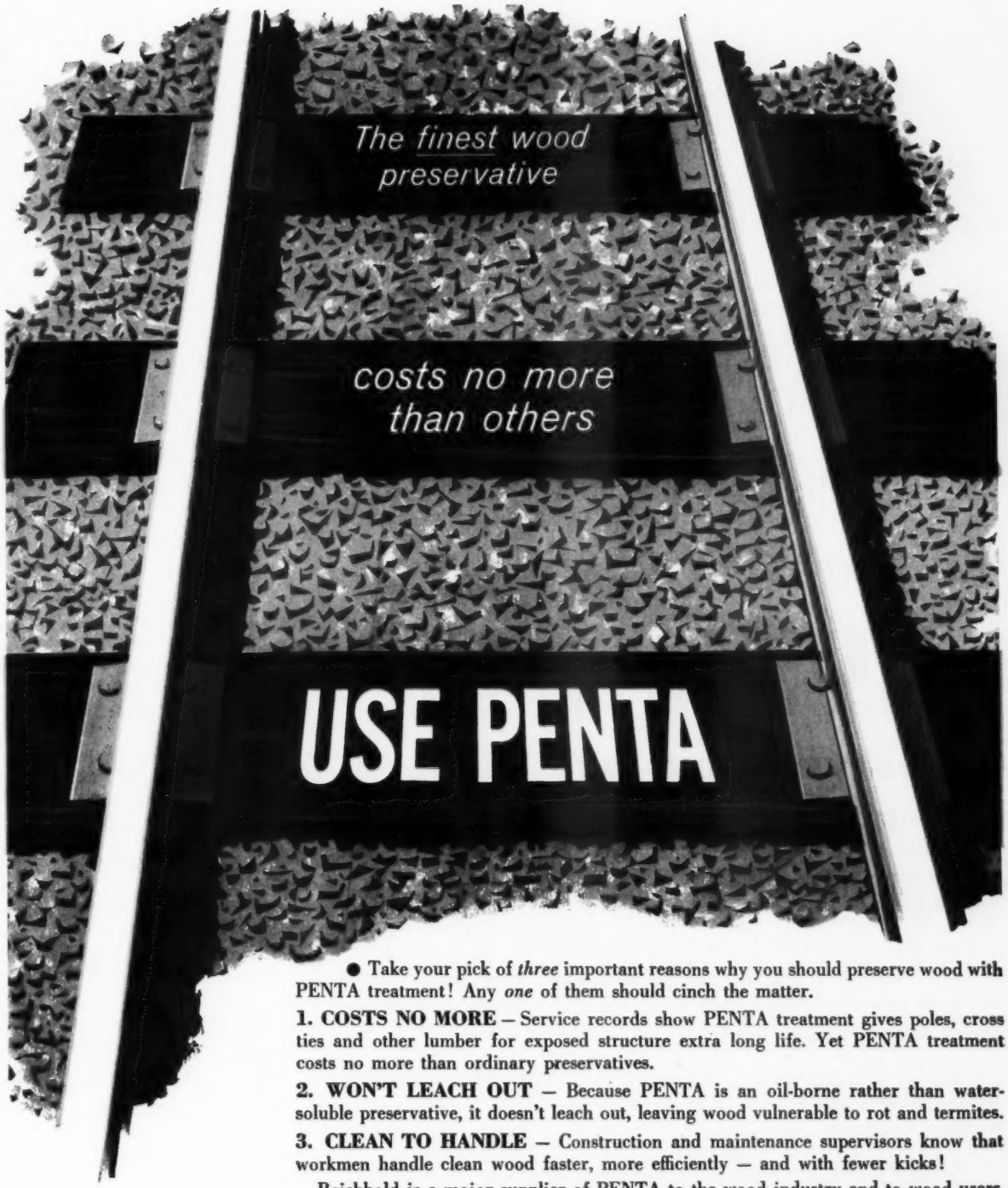
Can use insulation

By J. M. PETERSON
Bridge Engineer
Chicago Great Western
Oelwein, Iowa

Fresh concrete requires surface protection both in summer and winter months to prevent excessive loss of hydrating water during the early stages of hydration. Concrete placed during the winter months, or when temperatures below 40 deg F are anticipated, should have additional protection from cold, wind and snow or ice for at least seven days.

Various covering materials can be used for the protection of concrete, depending on the location and type of structure involved. Liquid-curing compounds, generally composed of a solution of synthetic resin in an organic solvent, can be applied on a wide variety of structures and on sidewalks and slabs rather quickly by means of spray or brush. The curing compound provides an envelope or moisture barrier which prevents the hydrating water in the concrete from evaporating. The major advantage of a liquid-curing compound is that no further attention is required after application.

Burlap or canvas applied to the concrete surface and kept continuously wet provides adequate curing,



● Take your pick of *three* important reasons why you should preserve wood with PENTA treatment! Any *one* of them should cinch the matter.

1. COSTS NO MORE – Service records show PENTA treatment gives poles, cross ties and other lumber for exposed structure extra long life. Yet PENTA treatment costs no more than ordinary preservatives.

2. WON'T LEACH OUT – Because PENTA is an oil-borne rather than water-soluble preservative, it doesn't leach out, leaving wood vulnerable to rot and termites.

3. CLEAN TO HANDLE – Construction and maintenance supervisors know that workmen handle clean wood faster, more efficiently – and with fewer kicks!

Reichhold is a major supplier of PENTA to the wood industry and to wood users. If you haven't done so yet, investigate this modern method of protecting your lumber investments – write for the name of your nearest Reichhold distributor of PENTA.

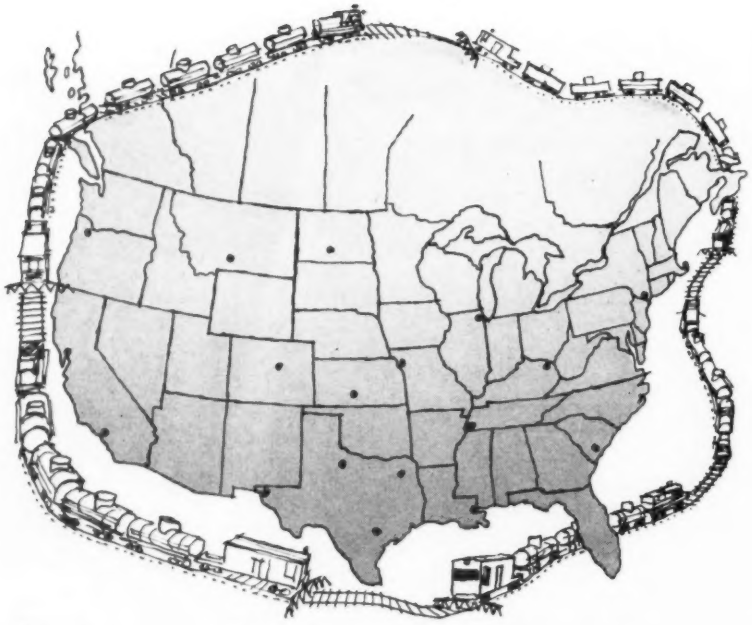
REICHHOLD

Creative Chemistry... Your Partner in Progress

RCI

Synthetic Resins • Chemical Colors • Industrial Adhesives • Phenol
Hydrochloric Acid • Formaldehyde • Glycerine • Phthalic Anhydride • Maleic Anhydride
Sebacic Acid • Ortho-Phenylphenol • Sodium Sulfite • Pentaerythritol
Pentachlorophenol • Sodium Pentachlorophenol • Sulfuric Acid • Methanol

REICHHOLD CHEMICALS, INC., RCI BUILDING, WHITE PLAINS, N. Y.



Nation-wide **AVAILABILITY of**

·HYKIL· WEED KILLERS

saves you time and money!

WHEREVER you have a vegetation-control problem, there is a HYKIL supply point nearby, from which the weed killer best suited for any spraying job can be shipped immediately and be ready for application in minimum time.

There are 18 of these plants, conveniently located for quick service to America's railroads. This wide availability is particularly important to you at this time of year, when vegetation which was not controlled earlier has gotten a long start.

HYKIL weed killers are specifically selected aromatic oil-based herbicides. Their extremely low cost makes them ideally suited where *economy* is a must!

HYKIL herbicides are backed by years of experience in specialized *railroad* vegetation control. If you have a weed problem today, write, wire or phone *NOW* . . . before the growth develops further!

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HYKIL

vegetation control
and
railway work equipment

What's the answer? (cont'd)

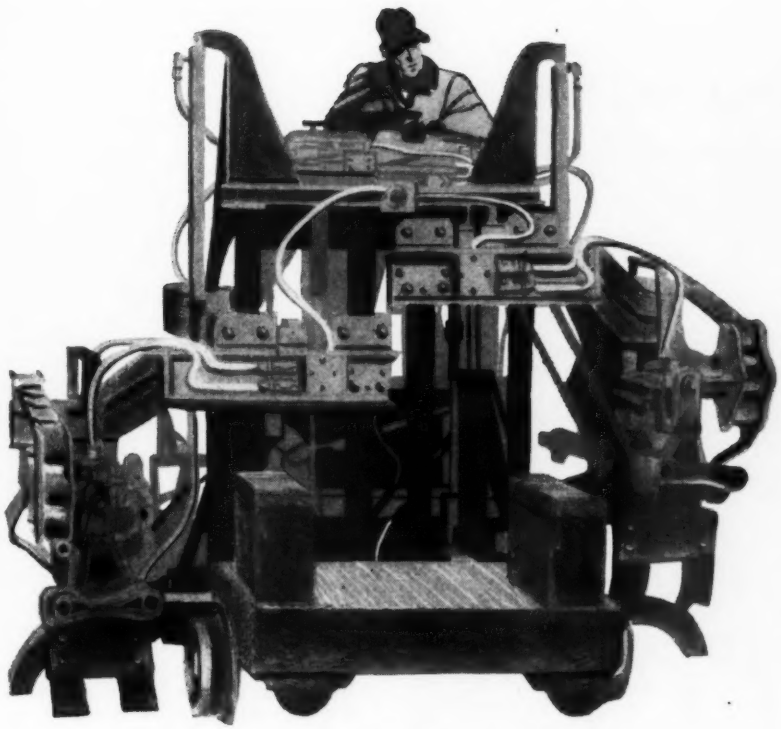
although fairly constant wetting is necessary, particularly in a hot, dry atmosphere. Labor costs and the element of possible neglect of wetting detract somewhat from the desirability of this type of protection. A canvas tarpaulin over a wood frame provides protection for winter concreting or bricklaying from wind and snow, and holds heated air or steam in contact with the concrete surfaces.

Polyethylene film in large sheets is being used increasingly for the protection of concrete and brickwork. Concrete slabs can be readily protected from loss of hydrating water by a direct application of the film to the concrete surface. Edges of the film must be held down by planking or other means to prevent raising by wind currents.

Formed concrete or new brickwork can be protected in winter by means of a 4-mil thickness of transparent polyethylene film. This should be placed over and secured to a wood framework to provide a nearly airtight housing around the work. Heated air or steam can be held in contact with the exposed concrete or brick surfaces without excessive loss of heat. The transparent film has an advantage over other conventional coverings in that it will permit the entry of outside light to the work.

Fiberglass, rock-wool or balsam-wool batts can be attached to the outside of concrete forms for cold weather concreting to retain the heat of hydration in the concrete. The insulated forms obviate the need for added heat from salamanders or propane heaters, with a consequent saving in fuel and labor. Heater attendants and watchmen are not needed. Probably the greatest advantage of insulation is the resulting reduction of fire hazards. Top surfaces of the concrete must of course be protected by insulation, straw or hay covered by canvas or burlap, or by other means.

A one-foot thickness of straw or hay sometimes covered by burlap or canvas is still used for protecting floor slabs and paving in rural areas where straw or hay are readily available. Considerable labor is involved in spreading the straw or hay, and disposal after use may be a problem.



ONE GREASE, ALL JOBS

Esso Multi-Purpose Grease H can be used with complete confidence in practically *all* grease-lubricating jobs in *all* types of maintenance-of-way equipment. It performs as well as—or better than...most "special-purpose" greases in chassis points, wheel bearings, water pump bearings—and in dozens of hard-working operating parts. Esso Multi-Purpose Grease H assures a strong protective seal that is resistant to water, dust, dirt—and to high temperature and load conditions. The use of a *single* grease in place of several means big savings in inventory and handling. On-the-site lubrication is simpler, speedier. And there's never the danger of incorrect lubrication. For complete data, call your nearest Esso office or write directly to:

Esso Standard Oil Company, Railroad Sales Division, 15 W. 51st St., N. Y. 19, N. Y.

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ESSO RESEARCH works wonders with oil

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RAILROAD PRODUCTS

A RAILROAD HANDYMAN

. . . travels on rubber . . . works in tight quarters

. . . lifts 14,000 lbs.

LOW-COST **BANTAM** SELF-PROPELLED

Here's a new materials handling idea railroads are taking to fast. So versatile is the BANTAM self-propelled as an all-purpose machine that it's just like having the services of *many* different rigs—but at one very-low-cost investment.

The BANTAM CR-35 has just one engine for travel and work. It's one-man operated, with no-shift forward-reverse. It's compactly sized to maneuver in tight areas and work in crowded yards efficiently. And it works and travels independently—simultaneously!

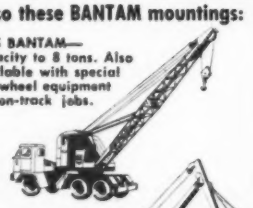
The materials handling scope of the BANTAM CR-35 is almost unlimited. The way it will busy itself around the yard or out on the right-of-way will chalk up amazing savings for you. Use it for car loading and unloading . . . stockpiling . . . sorting . . . transporting . . . erecting . . . handling bulk materials . . . driving pile. Then, with fast-change BANTAM attachments, you're equipped for shovel, back hoe, dragline, magnet crane and other important services.

The BANTAM CR-35 has all the big-rig features at a cost actually thousands of dollars under similar equipment: all-weather, all-vision cab . . . 7-ton capacity . . . power-up and power-controlled boom lowering for safe, precise "inching" of loads . . . simple, "cold-proof" positive mechanical controls . . . anti-friction bearings throughout . . . and much more!

RT-184

Also these BANTAM mountings:

T-35 BANTAM—capacity to 8 tons. Also available with special rail wheel equipment for on-track jobs.



C-35 BANTAM on crawlers.

SEE HOW the BANTAM self-propelled fits your needs and budget perfectly! Write for specification bulletin and new "Idea" folder showing many jobs handled faster and cheaper by the BANTAM CR-35. Also ask for details on the special rail-wheel-mounted CR-35.

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284 Park Street, Waverly, Iowa, U.S.A.

WORLD'S LARGEST PRODUCER OF TRUCK CRANES AND EXCAVATORS

Biographical briefs (cont'd)

(*Continued from page* 10)

College in 1923 with a B. S. degree in civil engineering. Mr. Jentoft entered railroad service with the Erie in September 1923 as a transitman. In subsequent years he served as junior engineer accountant, senior engineer accountant, acting chief clerk, office engineer, chief of corps, and general foreman at various points. In July 1934 he was appointed assistant division engineer at Huntington, Ind., being transferred to Hornell, N. Y., in February 1936. In March 1940 he was named division engineer and served in this capacity at various points until November 1953 when he was promoted to assistant to chief engineer, maintenance of way—system at Cleveland. In July 1954, Mr. Jentoft was appointed engineer maintenance of way of the Eastern District at Jersey City, the position he held at the time of his recent promotion.

Phillips R. Richards, 28, who was recently promoted to assistant division engineer of the Canadian National at Edmunston, N. B. (*RT&S*, Mar. p. 10), graduated from the University of New Brunswick with a B. S. degree in civil engineering. He entered railroad service with the CNR in May 1953 as an instrumentman at Edmunston. In 1955 he was promoted to junior assistant engineer at that location. He remained in that position until the following year when he was named assistant engineer at Edmunston—the position he held at the time of his recent promotion.

Supply Trade News

AMERICAN CHEMICAL PAINT COMPANY— This company has announced a change in its corporate name to **Amchem Products, Inc.** It is explained that, since the company started 44 years ago, its activities have been expanded and its products diversified in the field of chemicals — whereas it no longer manufactures paint of any kind.

HUBER-WARCO CO.—Larry J. Weiser, assistant purchasing agent, has been appointed district sales representative at Minneapolis, Minn. His territory includes the states of Wisconsin, Missouri, Nebraska, Iowa, North and South Dakota, Minnesota, upper peninsula of Michigan, southern Illinois, and Manitoba and Saskatchewan in Canada.

INTERNATIONAL RR'S WEIGHING CORP.— Maurice J. Buchman has resigned from the McGraw Edison Company to devote full time to his duties as executive vice president of the International Railroad's Weighing Corporation, Chicago and Hammond, Ind.

KOEHRING—The Pelican Machinery Company, Inc., New Orleans, La., has been ap-

No matter what others may claim for their equipment, THIS FACT REMAINS . . .

. . . rather conclusive evidence, we believe, that in the opinion of the vast majority of leading track chiefs there is nothing that equals the Jackson Track Maintainer for the dual purpose of production tamping and maintaining track of finest quality under all conditions. The more carefully you compare the more convinced you will be that Jackson is your best buy!

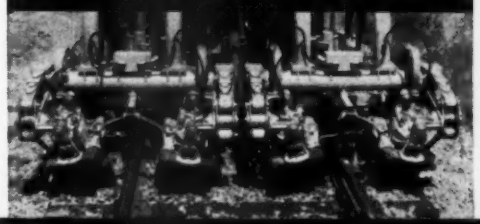
Acquirement plans to suit your needs

JACKSON VIBRATORS, INC.
LUDINGTON, MICHIGAN

THERE ARE MORE

JACKSON TRACK MAINTAINERS

IN OPERATION THAN ALL OTHER TAMPERS IN ITS CATEGORY

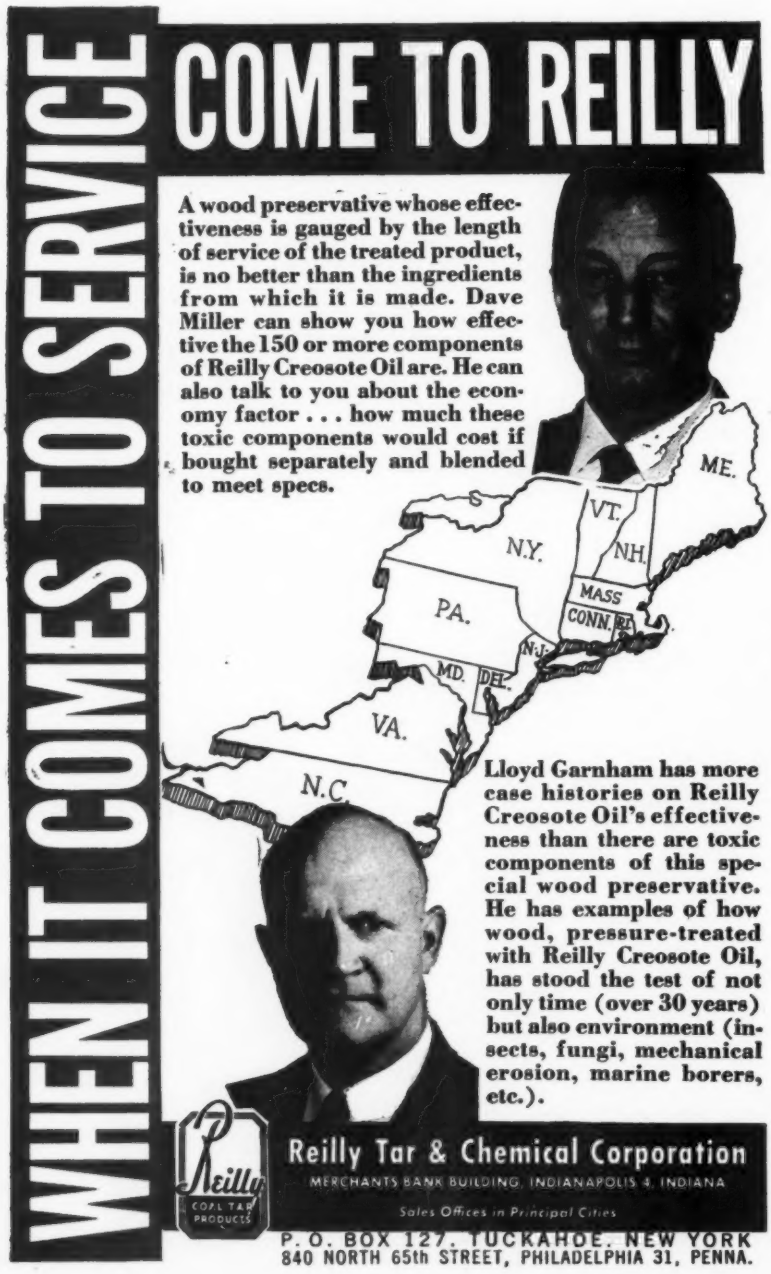


Supply trade news (cont'd)

pointed sales and service representative of the Koehring division, Milwaukee, Wis., and the Parsons Company, Newton, Iowa, both affiliates of the Koehring Company. Territory assigned to the new distributor includes that portion of Louisiana south of and including the counties of Beauregard, Allen, Evangeline, St. Landry, Pointe Coupee, West Feliciana, East Feliciana, St. Helena, Tangipahoa and Washington.

LETOURNEAU-WESTINGHOUSE CO.—Louis A. DePolis has been named vice-president in charge of marketing. Mr. DePolis comes to LeT-WesCo from the industrial truck division of Clark Equipment Company where he had served as director of sales since 1953. In his new position, Mr. DePolis will not only direct the company's sales orgnaization, but will also supervise and coordinate all marketing and related activities, including sales promotion, advertising, equipment service and field engineering.

NATIONAL CYLINDER GAS—Effective May 6 the name of this company was changed to **Chemetron Corporation.** The new name is a contraction of the names of three of many industries served by the company—chemicals, metals and electronics. The company has seven divisions, one of which, the National Cylinder Gas division, will handle the company's rail welding business. Other divisions are the Tube Turns division, Pennsylvania Forge division, Perforating Guns Atlas division (subsidiary operating as a division), Girdler Construction division, Girdler Process Equipment division and Chemical Products division.


WHEN IT COMES TO SERVICE
COME TO REILLY
A wood preservative whose effectiveness is gauged by the length of service of the treated product, is no better than the ingredients from which it is made. Dave Miller can show you how effective the 150 or more components of Reilly Creosote Oil are. He can also talk to you about the economy factor . . . how much these toxic components would cost if bought separately and blended to meet specs.
ME.
VT.
NH.
MASS
CONN.
R.I.
N.Y.
PA.
N.J.
MD.
DEL.
VA.
N.C.
Lloyd Garnham has more case histories on Reilly Creosote Oil's effectiveness than there are toxic components of this special wood preservative. He has examples of how wood, pressure-treated with Reilly Creosote Oil, has stood the test of not only time (over 30 years) but also environment (insects, fungi, mechanical erosion, marine borers, etc.).
Reilly
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Reilly Tar & Chemical Corporation
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Association News

American Railway Bridge & Building Association

The next meeting of the Executive Committee is scheduled to be held at the Chicago Engineers' Club on June 30. The principal business will be to review reports prepared by subjects committees for presentation at the annual convention, to be held at Chicago, September 15-17. Preliminary plans for the convention program will also be discussed.

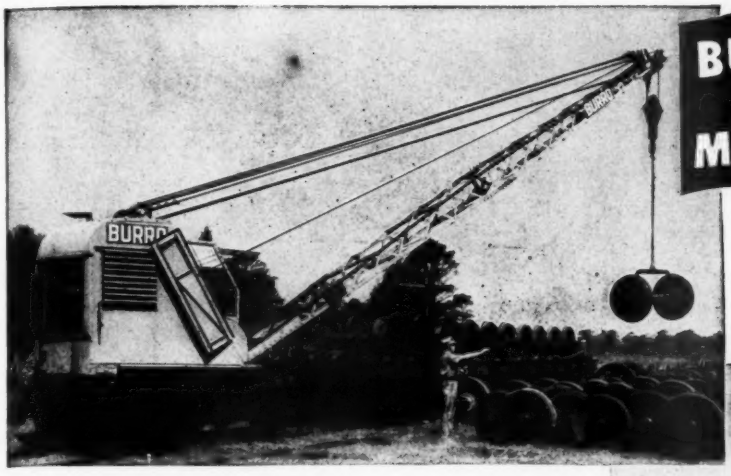
American Railway Engineering Association

A number of standing committees have scheduled meetings to be held in June. These meetings include the following:

Buildings, June 19-20, at association headquarters, Chicago; Engineering and Valuation Records, June 17-18, Sheraton-Ritz Carlton hotel, Atlantic City, N. J.; Yards & Terminals, June 16-17, Hotel Piedmont, Atlanta, Ga., with inspection trip to yards at Atlanta of the L&N and Southern; Economics of Railway Location and Operation, June 23-24, Duluth, Minn., including inspection trip to Great Northern's Allouez ore yard to observe operation of car data processing computer, electronic scales and other equipment; Maintenance of Way Work Equipment, June 9-10, Hotel Leland, Springfield, Ill., including inspection trip to plant of Allis-Chalmers Manufacturing Company; Waterproofing, June 12, AAR Research Center, Chicago.

Roadmasters' Association

The Executive Committee held a meeting at St. Louis on May 12 under the direction of President E. L. Anderson. The primary purpose of the meeting was to review preliminary drafts of reports prepared for presentation at the convention to be held at the Conrad Hilton Hotel, September 15-17. Four committee reports were read and discussed. Remaining reports will be reviewed at a subsequent meeting. At the meeting on May 12, the Executive Committee also handled routine business, and discussed details of the convention program.



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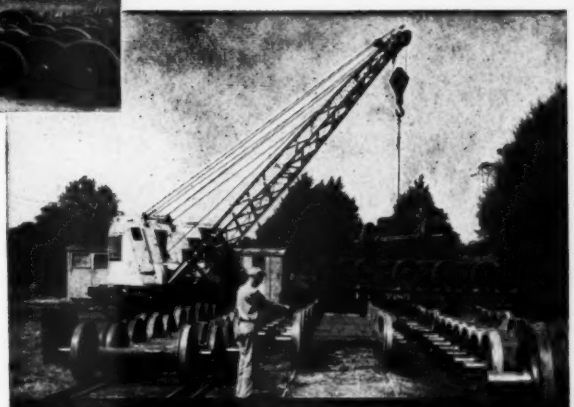

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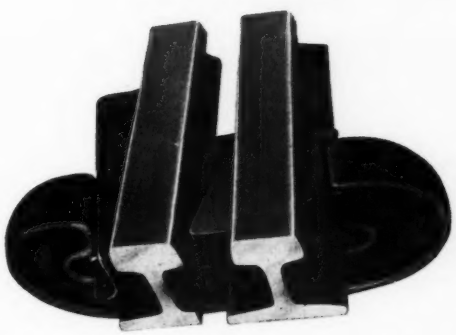

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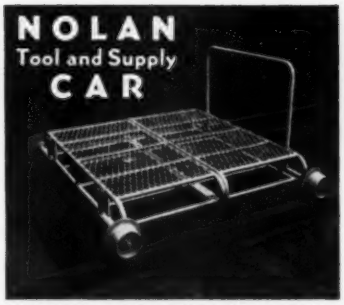

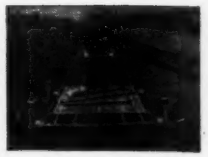

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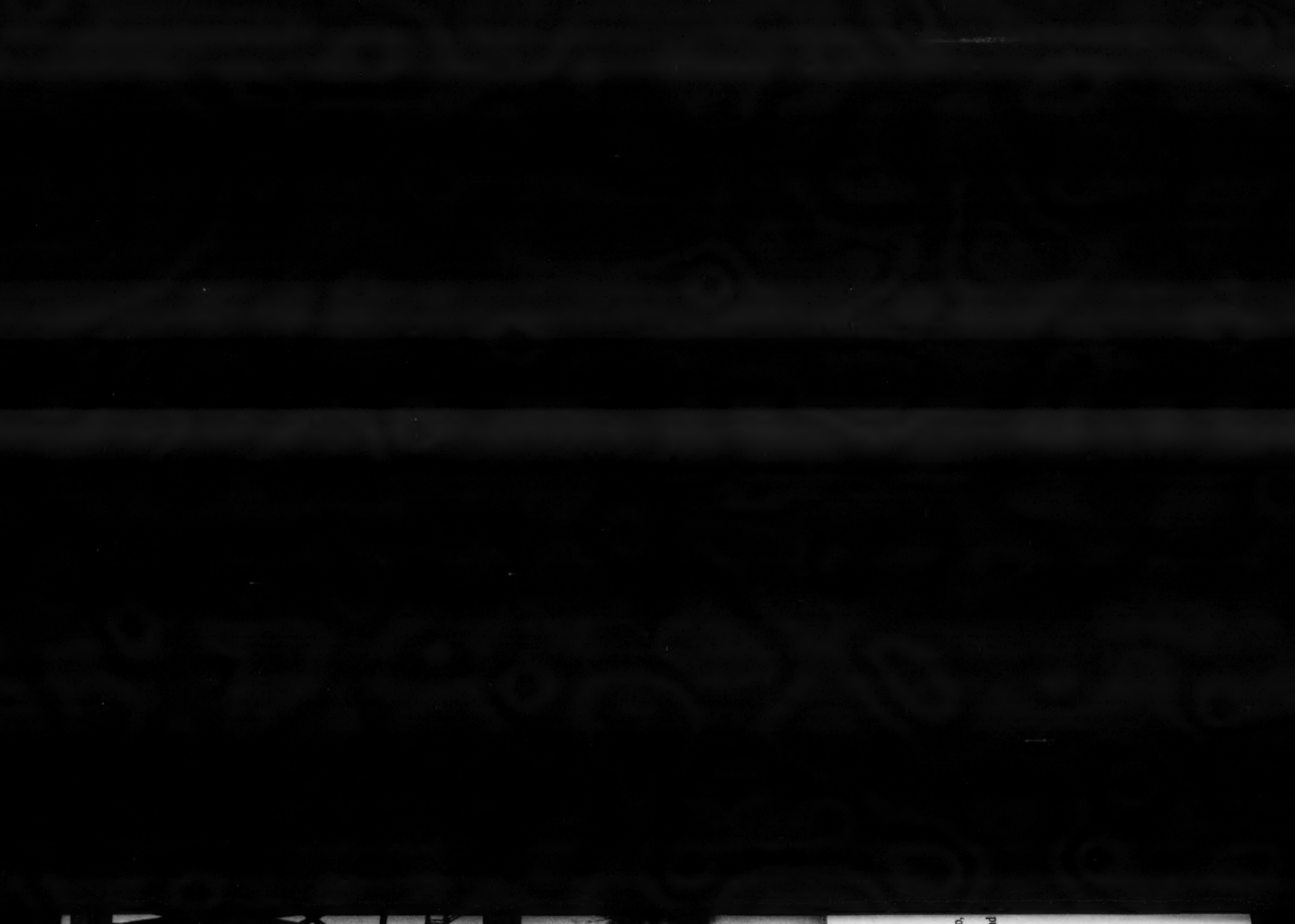
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